LIBRARY
CURRENT SERIAL RECORD
APR 26 1944
U.S. DEPARTMENT OF AGRICULTURE

THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY, DIVISION OF MYCOLOGY AND DISEASE SURVEY
BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING
AGRICULTURAL RESEARCH ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE

Volume XXVIII March 15, 1944 Number 6

The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

IN THIS ISSUE

Edwin E. Honey reports some tree diseases occurring in Wisconsin in 1943, page - 172.

Horace L. Barnett and E. W. Bodine report on brown rot and other stone fruit diseases in California, page - 181.

Species of Helminthosporium and Cercospora are involved in corn leaf-spotting in North Carolina according to S. G. Lehman, page - 183.

Edgar F. Vestal reports on the condition of stored grain and soybeans in Iowa, page - 184.

Diseases of cereal crops in various parts of Texas, page - 186.

The usefulness of the blue lupin as a winter cover crop in Alabama and Georgia may be impaired by diseases reported by John R. Jackson and G. M. Stone, respectively, page - 187.

On sweetclover, white smut in Louisiana and smut and anthracnose in Texas, are reported by Douglas C. Bain and by G. M. Watkins, respectively, page - 188.

Diseases of vetch in various States, page - 189.

Diseases on other legumes, page - 190.

Glenn KenKnight and Earle C. Blodgett send a comprehensive report on vegetable diseases in Idaho in 1943, page - 191.

Erdman West describes a Botrytis leaf spot on onions, newly observed in Florida, page - 198.

G. E. Altstatt, page - 199, discusses the cause of onion "blight" in Texas.

Wm. E. Rader and Donald Ashdown report results of spraying for onion mildew and thrips control, page - 201.

R. W. Samson describes a virus disease of lettuce occurring in Indiana greenhouses, page - 203.

Diseases reported on vegetable crops in greenhouses, page - 204; in winter truck-crop areas, page - 207.

Nematode survey in Florida, reported by A. L. Taylor, page - 223.

M. R. Harris reports on the condition of war-approved seed potatoes in Ohio, page - 227.

Storage diseases of potatoes, page - 229; sweetpotatoes, page - 236; squash, page - 237; and apple, page - 238.

Brief notes, page - 239, include reports on tobacco downy mildew in Georgia by G. M. Stone; sugar beet diseases in California, by E. W. Bodine; white leaf spot on broccoli, by R. C. Baines; and some corrections.

February weather, page - 240.

TREE DISEASES OBSERVED IN WISCONSIN[1]

Edwin E. Honey

CONIFERS

ABIES BALSAMEA (L.) Mill.--BALSAM FIR.

Witches broom, cause undetermined, no fungus fruiting. Probably caused by a rust fungus. Present on Madeline Island, Ashland County, September; appears to be of little economic importance.

PINUS BANKSIANA Lamb.--JACK PINE.

Cronartium quercuum (Berk.) Miyabe, Eastern Rust Gall. Examinations were made of natural Jack pine and of plantations growing in Wood and Adams Counties on Plainfield sand among stands of scrub oak. The majority of these oaks appear to be Quercus velutina Lam. and Q. ellipsoidalis E. J. Hill. Of 575 natural Jack pine examined in Adams County only 1.6% were found infected, the greater number of which revealed galls on the trunk. Of 2,686 planted Jack pine examined in 8 locations in Adams County only 0.44% were infected about equally on branch and trunk. In older Jack pine plantations in Wood County, a total of 477 examined trees revealed an average of 35.2% infected with an average of about 5 galls per infected tree, which is in marked contrast with conditions found in the younger plantations in Adams County. Jack pine in Adams County showed a surprisingly low percentage of trees infected, since infected oak was close, intermingled, and abundant. Perhaps this is explained by dry conditions when spores were produced on oak. In the older Wood County plantations the majority of galls appeared to be located between 6 to 10 feet from the ground indicating that these trees had attained this size at least before environmental conditions and the production of inoculum combined to develop heavy infection. The younger Adams County plantations had apparently not experienced such a favorable year for infection. Should a plantation be very young when a favorable year for infection occurs it is conceivable that extreme damage might result from the deforming and killing of young trees such as is commonly observed normally in small amounts.

"Burn Blight"--Cause undetermined.

Injury to Jack and red pine associated with spittle bug (e.g., Aphrophora saratogensis Fitch) has been observed in 7 counties: Oneida, Vilas, Florence, Marinette, Langlade, Forest, and Oconto. This trouble has been found widespread. It is rapidly and alarmingly extending its range. It is especially severe in certain areas in Marinette and Oconto Counties where killing on hundreds of acres of trees between 5 and 15 years old has already taken place. Dr. Riker has isolated Dematium pullulans from insect injuries and Nectria sp. from the margins of dead bark.

Forking--Causes probably various; incompletely understood.

Of 3,261 young Jack pine about 1.5-8 feet in height and from 4 to 8 years old in 8 plantations in Adams County only 1.1% showed forking.

---

[1] This report includes recent observations and unreported records taken earlier in the 1943 season on forest tree diseases and wood decay fungi. The identity of certain fungi here reported have been determined or verified by Drs. W. W. Ray and D. A. Preston of the Emergency Plant Disease Prevention Project.

In Oneida County Jack pine planted in 1939 and averaging 4.6 feet in height showed 39.6% of the trees forked and prolepsis of the 1943 buds on 25.4% of the trees. In Sauk County 20.3% of the trees were forked and 29.3% of the trees showed prolepsis of 1943 terminal buds. Prolepsis of 1943 buds was absent on examined trees in Dane County.

Witches-broom. Cause unknown.

Found on a single Jack pine tree in Wood County; of no economic importance.

Decay Organisms common on standing or fallen Jack pine and Jack pine slashing in Wood County are as follows: (1) Merulius ambiguus Berk.*; (2) Polyporus tulipiferus (Schw.) Overh.*; (3) Polyporus versicolor (L.) Fries*; and (4) Corticium lividum Pers.*

PINUS RESINOSA Ait. -- RED PINE

"Burn Blight" -- Cause undetermined. Distribution and severity similar to that on Jack pine as given above; important economically and spreading with alarming rapidity.

Forking: Causes probably various; incompletely understood.

The following counts have been taken in 6 counties:

Table 1. Incidence of Forking and Prolepsis on Red Pine in Wisconsin, 1943 Records

County	Average Height	Number Trees Examined	Percent Forked	Percentage of Trees Showing Prolepsis in 1943	1942	1941	1940
Adams	11.0	170	2.4	--			
Wood	2.0	1269	3.3	--			
Oconto	5.0	73	11.0	5.5			
Oneida	2.3	139	29.0	76.3	13.0	1.4	0.7
Sauk	3.8	251	31.1	24.3	20.7	4.0	3.6
Dane	7.4	304	2.3	--	--	---	---
Dane	1.8	267	48.7	0.7	4.9	9.7	1.1
Dane	2.9	104	80.8	60.6	61.5	15.4	0.9

Prolepsis of the terminal buds appears to be one type of growth frequently resulting in forking of red pine.

Sphaeropsis ellisii Sacc., Tip Blight or Die Back. Observed on young red pine terminals in Forest County.

PINUS STROBUS L.--WHITE PINE

Cronartium ribicola Fischer, Blister Rust.

According to Mr. T. F. Kouba, State Leader for Blister Rust Control, blister rust has been reported in 1943 on Ribes in all 71 counties of Wisconsin and on both white pine and Ribes in 56 counties. During 1943, infection on white pine was discovered for the first time in Calumet County. Additional centers of infection on both white pine and Ribes have been found in previously reported counties during 1943, especially Bayfield, Sawyer, Forest, Oconto, Langlade, Waupaca, Adams, and Wood

Counties. During 1943 there was adequate moisture during the fall favoring the retention of foliage and telial formation.

Some new pine infection centers were found in unprotected stands; e.g., one in Sawyer County showed 70.4% of the white pine infected with an average of 3.3. cankers per infected tree. In a nearby protected stand a similar count showed only 4.5% of the trees infected with blister rust.

Forking: Causes probably various; incompletely understood. Forking of pine in plantations has become of considerable recent concern in Wisconsin; especially since large acreages planted by the C.C.C. are now developing. The assertion of Jump (Phytopath. 28:798-811) that a fungus was concerned in causing forking stimulated a survey to determine the prevalence of forking and any contributing factors to its cause. Among such contributing factors might be: (1) Mechanical, such as winter or frost injury; ice and snow injury; browse by deer, cattle or rodents; debudding by birds; insect injury by weevil, aphids, etc.; (2) Genetic, where the tendency is inherited; (3) Physiogenic, as prolepsis of buds, and the physiologic effect of handling in the nursery or plantation and the influence of site and weather; and (4) Pathogenic, where a pathogen is involved.

Twenty-four samplings on planted and natural white pine were taken in 8 counties to determine the prevalence of forking and any evidence of past physiologic activity or mechanical injuries contributing to such forking. A brief summary of some of the data follows:

Table 2. Incidence of Forking, Mechanical Injuries and Prolepsis on White Pine in Wisconsin, 1943 Records

County	Height in feet (average or limits)	Total No. Examined Trees	Average Percentage of Examined Trees with: Total Forking	(Insects) weevil	Deer Browse	Terminals debudded 1943*	Prolepsis 1943 Buds
			Planted White Pine				
Oconto	4.9	713	53.9	14.6	None	63.2	22.7
Oneida	1-10	688	45.3	1.0	26.0	41.0	7.0
Vilas	1-6	153	24.8	None	3.9	10.5	20.2
Bayfield	1-10	200	50.0	3.0	50.0	1.0**	3.5
Sauk	1-7	288	13.5	None	None	None	5.2
Dane	1-20	472	19.0	None	None	None	4.2
			Natural White Pine				
Bayfield	2-10	54	48.1	None	None	None	None***
Vilas	1-12	79	65.8	5.1	None	12.7	3.8
Lincoln	2-11	104	53.8	9.6	5.7	47.1	1.9
Shawano	6.9	156	47.4	4.5	None	14.1	5.1

* Canadian pine grosbeak was the probable principal cause.
** Believed to be caused by red squirrel.
*** No Prolepsis on 1943 growth but present on 1942 and 1941 growth.

The planted white pine was set out from the fall of 1933 to 1940 and, in most cases, appeared to be 2-0 stock. The cover ranged from open to light and medium heavy and in most cases consisted of aspen;or aspen, cherry, and birch.

The percentage of forking in individual areas varied from about 10 to 73. Averages for the counties are given in Table 2. In some cases irregular growth is exhibited by a single leader arising from a lateral bud resulting in a crook in the stem which weakens the tree. Such irregular growth was not included in the counts on forking.

Forking caused by weevil is included. Weevil damage varied from none, especially in the southern counties, to 34% and was more severe in the more open northern stands. Such weevil damage may result in forking.

Dear browse was completely lacking in the Oconto County samplings since it is not customary for deer to winter in this area. However, in the Oneida County samplings deer browse occurred on from about 21 to 68% of the trees with an average of 26%. In Vilas County about 4% of the trees on the sampling plot were browsed by deer but the most severe injury by deer resulting in a great stunting and deforming of trees was found in Bayfield County. Not all deer browse results in forking although it appears to be one influence inducing it. No deer browse was found in Sauk and Dane Counties.

Prolepsis, or the precocious development of buds, was quite generally found in stands of all counties visited and appears to favor forking or multiple forking in many cases. This prolepsis may also be termed "extra" or "secondary seasonal growth". Prolepsis of 1943 buds ranged up to 35% of examined trees. It was highest in the Oconto County samplings and averaged there about 23%. Forking frequently results from prolepsis by the continued development of this secondary growth in competition with the main leader or with other laterals that have also proliferated the following year. Such continued growth frequently results in a false annual whorl from the tip of the proliferated growth which in turn results in giving an apparently different age to the stem when counted back from the tip on different branches of a fork. In the above table prolepsis is given only for the 1943 buds; however, it is often possible in white pine to recognize prolepsis in preceding years, as is shown in Table 3.

White pine in the southern counties had no damage by weevil, deer, or debudding by birds but it did have prolepsis of buds and forking. Prolepsis appears in some cases greatly to influence the amount of forking.

Debudding of white pine terminals by birds was observed first in the Oconto County area. Such debudding appears to have been initiated sometime between December 1 and 20. In taking data on the terminal buds it was found on December 20 that over 60% of the trees had had the terminal buds removed apparently by some bird. Later it was found that from 50 to over 80% with an average of 63% of the trees had their terminals debudded. On a visit to this area on December 31, 1943 and January 1, 1944 it was found that small flocks of the Canadian pine grosbeak, Pinicola enucleator leucura Müller, were feeding throughout this 965 acre plantation. No adult males were seen and it is probable that most of all of these bird visitants were females and immature males. A dead specimen was retrieved along the roadside and given to Professor Leopold for

identification and record. While the Canadian pine grosbeak has been reported as feeding on buds of trees as well as on fruits and seeds there appears to be no prior recognition that such feeding would assume the extent of actual damage. In debudding the main terminals the larger dominant buds are removed and commonly some or all of the smaller subordinate buds. Similar debudding occurred on the lateral terminals. Counts are based only on the debudding of the main terminal, because this is the terminal most important with relation to tree growth-form, although forking of laterals may also occur. No doubt such abundant debudding is a great shock to the tree and to the subordinate or adventitious bud or buds that may develop into leaders. From a count made of surviving buds for preceding years on trees in the Oconto area it seems probable that similar debudding has been taking place here for several years and there is little doubt that the plantation has been greatly injured by stunting, and misshaped and weakened trees. Similar debudding on young natural or planted pine has been observed to a somewhat less extent also in Oneida, Vilas, Forest, Lincoln, Langlade, and Shawano Counties. No debudding by birds was observed in Bayfield, Sauk, or Dane Counties. The State Conservation and Federal Forest Service have been notified regarding this previously unrecognized damage.

Table 3. Incidence of Prolepsis in White Pine in Wisconsin, 1943 Records

County	Total Examined Trees	Percent of trees Forked	Percentage of Trees Showing Prolepsis in: 1943	1942	1941	1940	1939
			Planted White Pine				
Oneida	135	57.8	10.4	0.7	4.4	3.0	---
Oneida	113	46.0	10.6	0.9	1.8	---	---
Oneida	335	37.9	5.4	1.5	0.9	---	---
Vilas	153	24.8	20.2	8.5	1.5	---	---
Bayfield	98	47.0	3.0	1.0	4.0	0.0	1.0
Bayfield	102	52.9	3.9	1.0	1.4	0.3	0.7
Sauk	288	13.5	5.2	8.7	---	---	---
Dane	104	19.2	16.3	3.8	---	---	---
Dane	218	25.2	0.9	1.4	6.0	0.4	0.4
			Natural White Pine				
Bayfield	54	48.1	0.0	3.7	9.3	---	---
Vilas	79	65.8	3.8	0.0	13.9	---	---
Lincoln	104	53.8	1.9	1.0	---	---	---

Witches-broom; cause undetermined

Individual white pines from 20-40 feet in height with large witches-brooms at or near the top of the trees have been recorded in Langlade and Portage Counties. Unconfirmed reports state that similar witches-brooms are present in Shawano and Marinette Counties.

PINUS SYLVESTRIS L.--SCOTCH PINE

Burn Blight. Cause undetermined.

Burn Blight or symptoms associated with spittle-bug injury has been recorded on planted Scotch pine in Oneida County.

TSUGA CANADENSIS (L.) Carr.--COMMON HEMLOCK.

Fomes applanatus (Pers.) Wallr., White Mottled Rot.

Recorded common in Oconto and Marinette Counties.

Fomes pinicola (Swarty) Cke.*, Brown rot of sap- and heart-wood.

Recorded common on dead logs and stumps especially in Forest, Oconto, and Shawano Counties.

Ganoderma lucidum (Leys.) Karst., Soft Spongy White Rot.

Common in northern Wisconsin and especially in Oconto, Forest, Bayfield and Shawano Counties.

HARDWOODS

ACER SACCHARINUM L.--SILVER MAPLE.

Cytospora chrysosperma (Pers.) Fries.* Cytospora Canker.

Recorded on an extensive trunk canker in Washburn County.

ACER SACCHARUM Marsh.--SUGAR MAPLE

Decay Organisms: Daedalea unicolor (Bull.) Fries.* Hymenochaete badio-ferruginea (Mont.) Lev.*, Polyporus brumalis (Pers.) Fries* and P. gilvus (Schw.) Fries* in Oneida and Marinette Counties; P. gilvus (Schw.) Fries in Sauk County; common on dead standing or fallen trees.

Eutypella parasitica Davidson & Loreng.* Eutypella Canker.

In Oneida and Bayfield Counties affecting up to about 2% of the maple.

Fomes applanatus (Pers.) Wallr. White Mottled Rot. In Sauk County common.

Fomes connatus (Weinm.) Gill.* Soft White Heart Rot. Common in Marinette and Bayfield Counties.

BETULA SPP.--BIRCH.

Fomes fomentarius (L.) Kickx.* White Mottled Rot.

On B. lutea Michx, yellow birch; on B. papyrifera Marsh, canoe birch; generally common and particularly abundant in Oneida and Bayfield Counties.

Fomes robustus Karst. Rot.

On B. nigra L., River birch; along the Wisconsin River in Sauk County.

Septoria (S. betulae (Lib.) West.*). Leaf Spot common on leaves of Betula sp. Madeline Island, Ashland County.

CARAGANA ARBORESCENS Lam. SIBERIAN PEA TREE.

Phyllosticta (P. gallarum Thüm.?*) Leaf Blight.

Severely affecting one tree in Washburn County in September. Two adjacent trees appeared free of the blight.

FRAXINUS PENNSYLVANICA Marsh. var. LANCEOLATA (Borkh.) Sarg. GREEN ASH

Burl: Cause undetermined.

Large trunk burls were common in 2 woodlots in Adams County.

JUGLANS SPP.--BLACK WALNUT AND BUTTERNUT

Marssonia juglandis (Lib.) Magnus.* Leaf Spot.
Commonly present wherever black walnut and butternut were found in the State.

POPULUS SPP. (P.TREMULOIDES Michx. & P. GRANDIDENTATA Michx.)-- ASPEN.

Cytospora chrysosperma (Pers.) Fries (Valsa sordida Nit.*). Cytospora Canker. On P. tremuloides in Oneida County.

Decay Organisms. Polyporus versicolor (L.) Fries and P. pargamenus Fries*. Bayfield County; P. adustus (Willd.) Fries, Oneida County*; P. fumosus (Pers.) Fries*, Wood County; Stereum hirsutum (Willd.) Fries*, Oneida County; S. purpureum Pers.*, Bayfield County; S. rufum Fries*, Waushara, Oneida, Bayfield Counties, general; Steccherinum pulcherrimum (B. & C.) Banker*, Forest County.

Dothichiza populea Sacc. & Briard. Dothichiza Canker.
Of moderate importance in the State chiefly upon nursery stock which the pathogen will commonly rapidly invade when the suscept is retarded by transplanting.

Fomes igniarius (L.) Giel.* White Heart Rot.
Most common and important heart rot organism found fruiting on aspen; particularly common in Marinette, Washburn and other central and northern counties especially in older stands.

Hypoxylon pruinatum (Klotsche) Cke. Hypoxylon Canker.
Since the report on Forest Tree Diseases dated Nov. 6, 1943,[2] two additional samplings in aspen stands for the incidence of Hypoxylon Canker have been taken. These data are given in the following table:

Table 4. Incidence of Hypoxylon Canker on Aspen.

Size in Acres	Average age of Dominant Trees (Years)	Average Height Dominant Trees (Feet)	Site Index	Total No. Examined Trees	Number Affected Trees		Per Cent Trees Affected	Estimated Average No. Diseased Trees per Acre
					Living	Killed		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
			Townsend Township, Oconto County					
0.1	17.6	25.2	50	141*	13	21	24.1	340
			Minocqua Township, Oneida County					
0.1	28.3	53.5	70	87**	15	2	19.5	170
0.2	Totals & Averages		--	228	28	23	22.4	255

* Of the total aspen on this square chain, 133 trees were P. tremuloides, 8 P. grandidentata; all P. grandidenta appeared free of Hypoxylon canker.

** With the exception of two healthy trees P. tremuloides, all trees on plot were P. grandidentata.

[2] PDR 27(23): 639-640. Nov. 15, 1943

Melampsora medusae Thüm.* Leaf Rust.
This disease was recorded during August in Columbia County.

PRUNUS SPP.--WILD CHERIES.

Cercospora circumscissa Sacc.* Leaf Spot.
Recorded on wild blackcherry, P. serotina Ehrh. in Shawano County.

Coccomyces hiemalis Higgins* Leaf Spot.
Recorded on leaves of pin cherry, P. pennsylvanica L. in Oneida and other counties.

Dibotryon morbosum (Schw.) T. & S. Black Knot.
Observed in most counties of the State visited during 1943 especially on the wild black cherry, P. serotina Ehrh. In Dane County a count on young trees in an unpastured woodlot gave 40% affected. Very similar observations were made on choke cherry, P. virginiana L.

Decay Organisms: Polyporus albellus Pk.* and P. hirsutus (Wulf.) Fries were commonly found on decaying branches of Prunus spp. in Bayfield County.

QUERCUS SPP.--OAKS.

Decay Organisms. Many common decay organisms on standing or living affected trees, stumps and slash were observed on oaks of which the following are the chief ones recorded during the fall of 1933: Aleurodiscus oakesii (B. & C.) Cke., Adams County; Daedalea unicolor (Bull.) Fries*, Hymenochaete olivaceum (Schw.) Banker*, H. curtisii (Berk.) Morg.*, Stereum fasicatum Schw.*, S. rameale Schw.*, and Trametes tenuis Karst*, Dane County; Polyporus pergamenus Fries*, Wood and Dane Counties; Polyporus hirsutus (Wulf.) Fries*, Adams and Dane Counties; Polyporus dichrous Fries*, Favolus alveolaris (D.C.) Quel.* and Schizophyllum commune Fries*, Wood County; Exidia glandulosa (Bull.) Fries*, Adams and Wood Counties, general; Polyporus cinnabarinus (Jacq.) Fries*, Sauk County.

Fomes applanatus (Pers.) Wallr. White Mottled Rot.
Recorded fruiting on a street tree in Portage County.

Fomes everhartii (Ell. & Gall.) v. Schr.* White Spongy Heart Rot.
This fungus appears to cause the most common and destructive heart rot of oaks in all scrub oak stands as also in the older farm woodlots of Adams, Wood, Waushara, and Portage Counties. This organism is frequently associated with sunken cankers and also produces greatly enlarged and distorted trunks. Fruiting bodies commonly appear on the trunk of affected trees up to about 12 to 15 feet from the ground and the basal and frequently the second log cut from such trees would be culls. Samplings taken in 3 counties are shown below in Table 5:

Table 5. Heart Rot of Oak.

County	Total No. Examined Trees	Percent of Examined Trees With: Heart Rot	Butt Rot	Producing Fruiting Bodies F. Everhartii	P. obtusus	With: Frost Cracks
(a)	(b)	(c)	(d)	(e)	(f)	(g)
Adams	41	14.6	--	9.7	4.5	4.9
Portage	75	38.7	9.3	8.0	2.7	10.7
Waushara	158	36.8	--	10.8	0.0	2.0

It is probable that the majority of the heart rot in the Waushara sampling was caused by F. everhartii.

Frost Cracks (Ribs). Low Temperature.

Recorded on from 2 to about 11% of the examined oak in Adams, Portage and Waushara Counties. Important for entry of pathogens and decay organisms.

Polyporus obtusus Berk.* Soft Heart Rot.

Next to F. everhartii this fungus appears to be the most common heart rot organism fruiting on affected trees in Adams, Wood, Waushara and Portage Counties and from observations made to date is more common in Adams and Wood Counties than the other 2. The percentage of examined trees showing fruiting bodies of P. obtusus is given in the above table (Table 5) under F. everhartii.

Polyporus sulphureus (Bull.) Fries. Brown Heart Rot.

Observed fruiting on living oak in Wood and Portage Counties. Previously it was also recorded from Polk County.

Polyporus gilvus (Schw.) Fries. White Rot of Sapwood and Heartwood.

Recorded quite commonly fruiting on injured living and dead oak especially in Adams, Wood and Dane Counties.

Pseudovalsa longipes (Tul.) Sacc.*

Common on oak twigs and branches in the state and recorded especially from Wood, Adams, Waushara, and Portage Counties.

Phomopsis sp. Phomopsis Tumor.

Recorded from single trees in each location on Quercus sp. (probably Q. velutina Lam.) in Adams, Sauk, and Waushara Counties and on Q. macrocarpa Michx. in Portage County. The galls are much smaller on the burr oak.

Marssonia quercus (Pk.) P. Magn.* Leaf Spot.

Commonly occurring in the State and especially recorded from Juneau and Columbia Counties.

Microsphaera alni (DC.) Wint.* Powdery Mildew.

Found on white oak, Q. alba L. in Jackson and Bayfield Counties. Adjacent black oaks were not affected.

Taphrina coerulescens (Desm. & Mont.) Tul.* Leaf Curl.

Recorded on black oak in Bayfield County.

SALIX SP.--WILLOW.

Daedalea confragosa (Bolt.) Fries.* White Mottled Rot.

A common decay organism on willow in the State.

Melampsora abietis-capraearum Tub.* Leaf Rust.

General in State and especially recorded on Madeline Island, Ashland County.

SORBUS AMERICANA Marsh.--MOUNTAIN ASH.

Entomosporium maculatum Lev. var. domesticum Sage*. Leaf Blight.

Common on Madeline Island, Ashland County in early September.

ULMUS AMERICANA L.--AMERICAN ELM.

Gnomonia ulmea (Schw.) Thüm.* Leaf Spot.

Less abundant this year than average. Recorded on a few shade trees in Dane, Barron and Racine Counties.

Nummularia repanda (Fries.) Nets.*

Recorded on decaying branches in Oneida County.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

RESULTS OF THE BROWN ROT SURVEY, AND NOTES ON SOME OTHER DISEASES OF STONE FRUITS IN CENTRAL CALIFORNIA

Horace L. Barnett and E. W. Bodine

(See also preceding issue, page 164).

Brown Rot Survey Notes

During the latter part of the week ending February 12, collections of peach and prune mummies were made in the concentrated peach-growing areas of Sutter and Yuba Counties and in the western part of Placer County. In western Placer County, in the vicinity of Auburn, there was evidence of heavy 1943 blossom and twig infection on prune. In other areas very little blossom or twig infection was seen on either prune or peach. -- Horace L. Barnett and E. W. Bodine.

Collections of brown-rot mummies from peach and apricot were made, during the week ending February 19, in the San Joaquin Valley, principally in the vicinities of Modesto (Stanislaus County), Merced (Merced County), Madera (Madera County), Fresno (Fresno County), Visalia and Farmersville (Tulare County). The greater number of collections from peach were made in the concentrated peach-growing area in Stanislaus County. Apricot mummies were also collected in Monterey County in the vicinity of Greenfield.

It was evident that brown-rot infection last year had been light in the southern portion of the San Joaquin Valley. Very few peach mummies were to be found in this section. There had apparently been a moderate amount of fruit infection in peach in the northern part of the San Joaquin Valley, especially in the vicinity of Modesto. Few twig infections on peach could be found. Blossom and twig infection on apricot and almond (especially of the Drake variety) had been moderate to heavy last year.

No blossom infection of the current season could be found on the earlier varieties of almond, which were in flower at this time in the San Joaquin Valley. -- Horace L. Barnett

During the week ending February 19, trips were made as follows: to Napa and Sonoma Counties in company with Dr. Max W. Gardner and Dr. H. Earl Thomas, of the University of California, to Solano County in company with Dr. Thomas, and to Contra Costa County with Mr. C. E. Scott, Extension Pathologist, University of California.

Brown rot mummies and diseased twigs of apricot, prune, plum, and peach, were collected in Napa County in the vicinities of Napa, St. Helena, Calistoga, and Healdsburg, and in the vicinity of Santa Rosa in Sonoma County. In Solano County collections were made in the vicinities of Green Mountain Valley, Fairfield, Vacaville, Winters, and Pleasant Valley, and in Contra Costa County in the vicinity of Walnut Creek.

1943 twig infections and mummies were most abundant in Napa and Sonoma Counties. However, in none of the areas where collections were made did it appear that growers had suffered severe losses in 1943.

Current infections were found on a few almond blossoms in Contra Costa County. -- E. W. Bodine.

During the week ending February 26, almonds were observed in Contra Costa, Alameda, San Mateo, and Santa Clara Counties. Very little brown-rot blossom infection was seen in any of the areas, although a number of active sporodochia on twigs were found in some sections. The earlier varieties of almonds were in full bloom at this time. Twig infections on apricots in the Brentwood area of Contra Costa County were producing abundant sporodochia in some orchards. Control practices were being carried out in practically all of the orchards observed.

A search for apothecia of the brown-rot fungus was made in Contra Costa County in the vicinities of Walnut Creek and Brentwood. Although numerous brown-rot mummies of peach and nectarine were present on the ground in the orchards, no apothecia were found at this time. The earliest of the apricot trees were beginning to blossom. -- Horace L. Barnett and E. W. Bodine.

Summary of Cultural Results

Isolations were made from the 1943 mummies and twig infections collected in the orchards to determine the species involved and their geographic and host distribution. In all cases the isolations were made from the conidial tufts produced on the surface of the mummies and twigs. All cultures were grown on potato-dextrose agar. The cultural characteristics used in identifying Sclerotina [Monilinia] fructicola and S. [M.] laxa were those described by Hewitt and Leach (Phytopath. 29:337-351. 1939).

Table 1. Species obtained in cultures from isolations from stone fruit mummies in California.

Districts	County	No. of orch-ards	Number of isolations								
			Apricot			Plum & Prune			Peach		
			A[a]	B	C	A	B	C	A	B	C
Santa Clara Valley	Alameda	7	13	--	--	--	--	--	--	--	--
	San Benito	5	10	--	1	5	--	--	--	--	--
	Santa Clara	36	21	--	--	34	--	--	8	8	--
Brentwood	Contra Costa	13	14	--	--	--	--	--	11	--	--
San Joaquin Valley	Fresno	5	--	--	--	--	--	--	2	4	2
	Merced	4	--	--	--	--	--	--	2	5	--
	Tulare	3	--	--	--	--	--	--	no cultures obtained		
	Stanislaus	26	--	--	--	--	--	--	5	27	9
Greenfield	Monterey	1	2	--	--	--	--	--	--	--	--
Sacramento Valley	Sutter	28	--	--	--	9	--	--	11	25	9
	Yuba	9	--	--	--	--	--	--	4	11	3
Auburn	Placer	1	--	--	--	3	--	--	--	--	--
Napa and Santa Rosa	Napa	26	--	--	--	38	2	4	17	--	--
	Sonoma	10	--	--	--	19	--	--	--	--	--
Winters Green Valley Fairfield Pleasant Valley	Solano	28	6	--	--	13	--	--	9	--	--
Totals		203	66	--	1	121	2	4	67	80	23

[a] A. - Sclerotinia laxa. B - Sclerotinia fructicola.
C - Appeared to be a mixture of A & B

Isolations from twigs of almond, apricot, peach, prune, plum, and Prunus besseyi yielded only S. laxa. Most of the twigs were collected in Sonoma and Napa Counties.

A summary of the results of the isolations made from mummies is presented in Table 1. Usually from 2 to 4 cultures were obtained from the mummies collected in each orchard; in a few cases duplicate cultures were made from the same mummy. In areas where peach is the dominant fruit grown S. fructicola was more commonly isolated from mummies, whereas, isolations from apricot, plum, and prune mummies yielded only S. laxa, with the exception of 1 apricot and 4 prune mummies. (See also C. E. Yarwood: Apricot diseases in the Santa Clara Valley in 1943, PDR 28 (1): 33; Jan. 1, 1944). Six isolations of S. laxa were made from nectarine mummies from 2 orchards in Contra Costa County.

Very few mummies were found in orchards in the eastern portion of the Santa Clara Valley, the southern portion of the San Joaquin Valley, Contra Costa County, Solano County, or Placer County. In these areas fruit rotting appeared to have been very light in the 1943 season. -- Horace L. Barnett and E. V. Bodine

Notes on Other Diseases

Rust on almond. It was noted in December (PDR 27(25):724. Dec. 15, 1943) that rust (Tranzschelia pruni-spinosae) was present on green leaves still remaining on almond trees near Greenfield in Monterey County, and the possibility was suggested that such green infected leaves might serve to carry the rust fungus over from season to season. The same orchards were visited again on February 17, 1944. No green leaves from last season remained on the trees at this time. -- Horace L. Barnett.

Mistletoe on stone-fruit trees. Mistletoe (Phoradendron sp.) was found on one plum and one apricot tree in Solano County. -- E. V. Bodine. EMERGENCY PLANT DISEASE PREVENTION PROJECT.

CORN LEAF DISEASES OBSERVED IN NORTH CAROLINA IN 1943

S. G. Lehman

Observations made in North Carolina in 1943 indicate that considerable damage to corn is being caused by leaf spotting fungi. The broad ovate spot caused by Helminthosporium turcicum was seen only infrequently in the fields visited by the writer. Much greater damage was indicated from a second type of spot, which occurred in great abundance in some fields, involving as much as 50 to 60% of the area of individual leaves. Usually these spots were most numerous on leaves near the ground but they also occurred, although in decreasing numbers, on the upper leaves. The lesions were at first nearly round and a mm. or less in diameter. The leaf veins seemed to prevent lateral spread of the causal organism and the spots as they enlarged became elongated parallel to the veins. Spots originating from a single infection filled up the space between 2 adjacent veins for

a length of 10 to 15 mm. Individual spots sometimes covered 2 interveinal spaces and reached a length of 20 mm. The striking characteristics of this type of spot were the parallel sides and bluntly rounded ends, resulting in a long, narrow, and roughly rectangular lesion. In color, the diseased tissue was at first reddish-brown but soon bleached to light brown, the ends of the elongating spots being darker brown than the middle portion.

Collections from a few of the fields showing this type of spot were examined microscopically. A small proportion of the spots bore a sparse crop of conidia of the genus Cercospora. Conidia of the Helminthosporium type were seldom found and then very few from any one spot. Isolations were attempted from one collection made October 12 near Albemarle. A Cercospora (species not determined) was obtained from 6 out of 10 spots from which isolations were attempted. This Cercospora was found to be pathogenic on young plants in the greenhouse, slowly producing lesions like those described above. Two of the 10 spots from which isolations were attempted yielded a Helminthosporium. The conidia of this fungus closely resemble and are believed to be the imperfect stage of the corn "leaf spot" fungus described by Drechsler (Journ. Agr. Res. 31:701-726. 1925) and named by him Ophiobolus heterostrophus at first but later set up as the type species of a new genus, Cochliobolus. Cultures of this isolate are highly parasitic on corn leaves in the greenhouse, infections becoming plainly visible as water-soaked areas within 48 hours. On the field-grown leaves the spots from which this Helminthosporium was obtained were not noted to be different in appearance from those yielding Cercospora. One of the spots yielded parasitic isolates of both Helminthosporium and Cercospora. On young leaves in the greenhouse the Helminthosporium spots enlarge more rapidly, more often involve 2 interveinal spaces, and bleach whiter than those produced by Cercospora. In the field one may not be able to distinguish between spots produced by the 2 fungi.

UNIVERSITY OF NORTH CAROLINA

DISEASES IN STORED GRAIN AND SOYBEANS IN IOWA

Edgar F. Vestal

During the past week observations were made on stored grain on farms in Hardin, Franklin, Cerro Gordo, Hancock, Kossuth, Palo Alto, Clay, O'Brien, Sioux, Plymouth, Woodbury, Monona, Crawford, Shelby, Audubon, Guthrie and Dallas Counties. Samples of the grain were taken from farms on previously determined quarter-sections. The largest number of samples were of oats and corn with a smaller number of samples of soybeans. These samples are being treated as those previously collected and the data will be presented as rapidly as obtained.

Germination and the percentage of diseases have been secured for the samples of oats, corn, and soybeans obtained in the previous survey reported for the period ending February 5.

Oats. The following table contains the preliminary data for the oats:

Germination and percentage of scabby kernels in samples of oats collected from farms on previously determined areas in northern Iowa

VARIETY	Samples	Germination		Scab	
		Range	Average	Range	Average
Boone	11	1 - 89	71.1	1 - 3	0.81
Control	3	75 - 93	86.3	1 - 2	1.00
Iowa 105	3	10 - 80	58.5	0 - 3	2.00
Marion	1	---	89.0	---	5.00
Tama	1	---	88.0	---	0.00
Iowa 103	1	---	76.0	---	3.00
Yellow Kherson	1	---	93.0	---	3.00
Green Russian	1	---	96.0	---	0.00

A glance at the table will show the relative number of farmers growing the different varieties of grain in the 11 counties from which the samples were secured. Farmers complained they could not secure seed of the Tama oat, hence the few samples of that variety. Germination was varied and the cause appeared to be the unusually heavy rains at harvest time and the resulting molding in the shock and bin. Most of the farmers, however, insisted that no heating took place. Results of these germination trials will be reported to the farmer. During the collecting of the samples the farmers were urged to make their own rag-doll tests for germination of their grain before planting.

The percentage of scabby [Gibberella zeae] kernels ranged from none to as high as 5%. Only one man reported that his cattle would not eat the oats and that was a crop of Iowa 105 grown on very low land, which molded badly in the shock. When examined in the Seed Laboratory at Iowa State College the sample tested 3% scabby kernels. The sample of Marion which contained 5% of scab, as shown in the table was eaten by the stock, including pigs, with no apparent dislike. The animals on this farm were all in good health and there was no apparent bad effect of the scabby oats. A total of 57.44% of the samples contained scabby kernels.

Corn. Hybrid corn samples were secured from 19 different areas in the 11 counties visited. Moisture content and the percentages of the various fungi were obtained and the data presented in the following table.

Moisture content, and percentage of fungi in samples of hybrid corn collected in previously determined areas in northern Iowa

No. Samples	Diplodia	Gibberella	Penicillium	Other Fungi	Moisture Content
43	4.39	4.14	2.27	8.81	11.82

The range of Diplodia was from 0 to 20%, that of Gibberella from 0 to 23%, of Penicillium from 0 to 8%, and for the other fungi from 2 to 16%. It would appear that the moisture content is low enough to inhibit any but a very slow spread of the rots in storage. The samples were largely from cribs. Most of the outdoor open cribs had been either fed or shelled.

Soybeans. Five samples of soybeans were secured in the survey and germinations secured. These varied from 86.86 to 90.00%. Lack of time has prevented the determining the kinds of fungi that occurred on the seed. During the survey just completed only one sample was secured. In some cases the seed had not been secured while in others the farmer indicated that no soybeans are to be planted this year. In the northwestern portion of the State this indicated an increase in the hemp plantings. During this survey no attempt was made to secure data on hemp.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

REPORTS ON DISEASES OF CEREAL CROPS IN TEXAS

CEREAL DISEASES IN THE LOWER RIO GRANDE VALLEY OF TEXAS: Small grains are not an important crop in the Lower-Rio Grande Valley, but there are many small patches grown for winter pasture which are important as sources of inoculum for the northern crops. Oats is probably the most commonly grown, often with wheat and barley, sometimes with clover.

Oats. In 14 fields scattered throughout the Valley crown rust (Puccinia coronata) is very abundant, especially in the older fields where in some cases infection is 100% on every plant. Such fields are now turning yellow and the lower leaves are dead. The rust was first observed January 21, 1944. It is rather difficult to explain these heavy infections without assuming spore showers from northerly winds.

On Febraury 3, stem rust (Puccinia graminis) was found near Elsa; since that time it has been found in 3 other fields. Infections are light and scattered and appear to be relatively recent. The disease is beginning to spread.

Wheat. Leaf rust (P. rubigo-vera tritici) was heavy in 2 out of 4 fields while the other fields showed light scattered infections. First observations were made February 3. A second visit to the first 2 fields 2 weeks later showed extensive development of the rust. Under the heavy grazing conditions the lower leaves were turning yellow and teliospores were being formed.

Stem rust has appeared in a small plot at the Experiment Station. When first discovered on February 26, there was a single infection center but it is spreading rapidly. The wheat is the Seabreeze variety developed by E. S. McFadden at College Station.

Barley. Infections of leaf rust (P. anomala) were slight and scattered in the 3 fields where it has been found, on January 25 and subsequent dates.

Powdery mildew (Erysiphe graminis) was developing in 2 fields. In one field it was present on very young seedlings; in the other field mildew was heavy on some of the older plants.

Two species of Helminthosporium have been identified from several fields: H. teres (net blotch) and H. sativum (spot blotch).

Flax. Crown rot (Sclerotinia sclerotiorum), reported earlier, is increasing somewhat in the flax fields near La Feria. An unidentified leaf spot is present on most of the middle leaves. -- Stuart M. Pady, Emergency Plant Disease Prevention Project.

CONDITION OF SMALL GRAINS IN THE TEXAS WINTER GARDEN REGION: Observations on barley in this area were limited to small experimental trial plats on Substation no. 19 at Winter Haven (Dimmit County). The variety Wintex was 100% affected by powdery mildew (Erysiphe graminis), whereas the varieties Tunis and Texan were free from the disease.

Oat plantings were observed at frequent intervals in most of the counties in this region. Leaf blotch (Helminthosporium avenae) was noted in nearly every planting surveyed, but damage was not severe in most cases.

No disease was observed in wheat fields examined in Bexar and Medina Counties at this time. -- Howard W. Larsh, Emergency Plant Disease Prevention Project. February 7-28.

DISEASES OF CEREALS IN THE COASTAL BEND AREA OF TEXAS: Barley. Tunis and Vaughn varieties of barley in a test planting near Robstown were found to have spot blotch (Helminthosporium sativum) and the Vaughn variety also had leaf rust (P. anomala) (identified by Dr. D. A. Preston).

Oats. Late-planted oats and early oats that have been grazed extensively are free from rust, but volunteer plants, and ungrazed early-planted oats show considerable crown rust.

Flax. Early and late plantings of flax are in good condition; a few cases of damage from excess water were seen and, in one field, weeds had taken over. A trace of Alternaria leaf spot was noted in one field near Bay City, Matagorda County, February 6. -- George E. Altstatt, Emergency Plant Disease Prevention Project. Reports to February 15; March 1.

HALO BLIGHT ON OATS IN EAST TEXAS: During the week ending February 26, a number of small fields of winter oats observed in Polk, Nacogdoches, and Cherokee Counties had foliage rather heavily attacked by the halo leaf spot organism (Pseudomonas coronafaciens). -- G. M. Watkins, Emergency Plant Disease Prevention Project.

DISEASES REPORTED ON THE BLUE LUPINE (LUPINUS ANGUSTIFOLIUS)

AN UNDETERMINED WILT IN ALABAMA: A wilt has developed on blue lupines at the Alabama Experiment Station. It is especially bad on the early plantings; as many as 70% of the plants were killed in the September 1 planting, and up to 14% in the September 15 planting. Mr. Coyt Wilson of the Alabama Agricultural Experiment Station has isolated a species of Fusarium, bacteria, and an undetermined Phycomycete from infected plants. He is trying pathogenicity tests with these organisms. There does not seem to be any previous record of such a condition on lupines. Blue lupines are a relatively new crop in Alabama, and offer promise of becoming the number-one winter legume for the lower coastal plain. Should the Fusarium isolated be F. vasinfectum and prove to be the cause of the disease, the use of lupines as winter cover ahead of cotton might be seriously restricted. -- John R. Jackson, Emergency Plant Disease Prevention Project. Report January 13 - 18.

RHIZOCTONIA COLLAR ROT IN GEORGIA: Blue lupine, a winter leguminous cover crop, is new to the south Georgia area. A number of plantings, most of which followed peanuts, were observed during the period February 1 to 15. A serious disease, Rhizoctonia collar rot, was found in all fields observed. In general the plant stand was found to be poor. This was no doubt in part due to dry weather at seeding time. However, at least 95% of the plants in most fields were infected with Rhizoctonia with dead plants running as high as 25% and a much higher percentage badly stunted.

The fact that blue lupine is so susceptible to Rhizoctonia may seriously impair the value of this plant as a cover crop in this area. Especially would this be true when the crop is grown following peanuts which are also susceptible to attack by the organism.

So far as available literature reveals, Rhizoctonia has not been reported on blue lupine previously. -- G. M. Stone, Emergency Plant Disease Prevention Project.

DISEASES ON SWEET CLOVER IN LOUISIANA AND TEXAS

SMUT IN SOUTHEASTERN LOUISIANA: Sweetclover in Avoyelles and West Baton Rouge Parishes was rather heavily infected with white smut (Entyloma meliloti). The disease appeared to be restricted to those leaves nearest the ground where aeration was poorest. -- Douglas C. Bain, Emergency Plant Disease Prevention Project. February 13 - 19.

SMUT AND ANTHRACNOSE IN CENTRAL AND EAST TEXAS: A trip was made February 18 and 19 with Dr. L. M. Blank, of the U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering to inspect winter legumes in experimental plots and on farms in several central Texas counties.

Leaf smut (Entyloma meliloti) was found causing slight to moderate damage to Melilotus indica on 2 farms at Zionsville and on 2 at Burton, both communities in Washington County. Volunteer roadside patches of M. indica showed the smut in Washington, Fayette, Lee, and Williamson Counties. The most severe attack of the smut was seen in a planting of M. indica near Thrall, Williamson County. In this place moderate defoliation of the plants in certain parts of the field seemed attributable to the smut. Patches of plants were dying at one end of this field as a result of a second disease characterized by lesions at the bases of the stems. Dr. L. M. Blank identified this disease as anthracnose (Colletotrichum trifolii), and stated that a trace of it had been observed on Meliotus indica in his plots the year before.

Hubam clover (Melilotus alba annua) was inspected in several places on this trip, often in plots adjoining those of M. indica. No evidence of Entyloma meliloti was found on Hubam clover. A trace of some punctiform leaf spot was observed in two plantings and was suspected of being incipient lesions of E. meliloti. Later microscopic examination failed to confirm the suspicion. No fructifications or spores were seen in the material.

A trip was made February 21 through 25 to east Texas. A volunteer road-

side group of M. indica at New Summerfield in Cherokee County had a trace of leaf smut. -- G. M. Watkins, Emergency Plant Disease Prevention Project.

DISEASES OF VETCH

ALABAMA: At the experiment station, January 18, traces of Ascochyta [species not designated], Fusarium root rot, and Aphanomyces foot rot were observed, on common, Alabama Smooth Pod, Auburn Hairy, Willamette, and Monantha vetches. -- John R. Jackson, Emergency Plant Disease Prevention Project.

MISSISSIPPI: A considerable acreage of winter legumes and oats is grown in the Delta area above Vicksburg and across to Greenwood. This area and the Starkville, Meridian, and Polarville areas were visited March 6 to 11.

Protocoronospora nigricans and a species of Ascochyta (A. pinodes ?) were found on leaves and stems of severely damaged hairy vetch plants near Cary (Issaquena County). The damage was general throughout the field of several acres. The same disease has all but wiped out plants in Soil Erosion test plots at Starkville. Cultures of P. nigricans are being obtained from diseased plants collected at Starkville in order to study the fungus further.

At Greenwood (Leflore County) a considerable amount of leaf spotting was found on hairy vetch planted with oats. A species of either Colletotrichum or Volutella was found associated with the disease. This material also is being cultured for study.

Colletotrichum viciae was found on hairy vetch in fertilizer plots at the Poplarville Branch of the Mississippi Experiment Station. As with the false anthracnose, loss was practically complete.

It should be noted that there was a rainy period prior to the outbreak of all these diseases. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

LOUISIANA: Only 2 fairly large acreages of vetch were seen during the week ending February 19, and these were near Ville Platte (Evangeline Parish). In one field from 5 to 10% of the plants were affected by root rot; of which the causal agents were not determined. In the other field, of 15-20 acres about a mile distant, up to 40% of the plants had been killed and the remaining plants showed leaf spots and stem lesions, on parts near the ground. A species of Colletotrichum (C. viciae ?) was found to be associated with the stem lesions. Specimens were sent to Dr. W. W. Ray for determination. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

EAST TEXAS: A field of about 4 acres of mixed hairy and Willamette vetch being grown as a winter soil-building crop at Ace, Polk County, was not as thrifty as desired by the owner. The roots of plants pulled up

in various parts of the field all showed rootknot (Heterodera marioni). -- G. M. Watkins, Emergency Plant Disease Prevention Project, week ending February 26.

DISEASES REPORTED ON OTHER LEGUMINOUS FORAGE AND COVER CROPS IN SOUTHERN STATES

DISEASES ON ALFALFA IN SOUTHEASTERN LOUISIANA: A small amount of downy mildew (Peronospora trifoliorum) was noted in large plantings on a plantation near Houma, Terrebonne Parish. Leaf spot (Pleospora herbarum) was also found in this area, and was very common in fields along Bayou Lafourche below Raceland. -- Douglas C. Bain, Emergency Plant Disease Prevention Project. February 21 - 26; February 28 - March 4.

ALFALFA DISEASES IN TEXAS: In the Lower Rio Grande Valley rust (Uromyces medicaginis) is present in most fields. Darluca filum was found on the uredosori in one field near Elsa. Leaf spot (Pseudopeziza medicaginis) can usually be found in small amounts in all of the fields. -- Stuart M. Pady, Emergency Plant Disease Prevention Project. Report for February.

In the Coastal Bend area, a small alfalfa acreage just south of Wharton, Wharton County, was rather severely defoliated by Pseudopeziza medicaginis. The fields concerned had apparently suffered excess moisture conditions. Loss of leaf was estimated at 15%. The plants should recover with the advent of dry weather. -- George E. Altstatt, Emergency Plant Disease Prevention Project. Week ending February 15.

ROOT ROT AND COLLAR ROT OF AUSTRIAN WINTER PEAS IN GEORGIA: A number of plantings in the Tifton area were observed from February 1 to 15. Root rot due to Pythium sp., and collar rot caused by Rhizoctonia, were found to be very active in this section. A high percentage of plants examined were affected by one or both of the organisms. Little evidence of damping-off was seen although weather conditions through January and February in the Tifton area have been most favorable for this trouble. Plant stands on the whole are fair to good but thus far the growth has been poor. Much of the poor growth is attributed to attack by Pythium and Rhizoctonia. -- G. M. Stone, Emergency Plant Disease Prevention Project.

DISEASES OF AUSTRIAN WINTER PEAS IN ALABAMA: In a luxuriant stand at the Draper Prison in Elmore County, January 13, a mild infection of Ascochyta blight, and moderate amounts of Fusarium root rot and Aphanomyces [euteiches] foot rot, were observed. Damage was slight to date. Small amounts of Ascochyta and traces of root and foot rots were noted at the Experiment Station, January 18. -- John R. Jackson, Emergency Plant Disease Prevention Project.

ASCOCHYTA ON AUSTRIAN WINTER PEAS IN MISSISSIPPI: In southern Mississippi, during the week February 21 to 26, a small amount of Ascochyta leaf

spot (A. pinodella ?) was found in a fairly large acreage between Wiggins and Lucedale.

A considerable acreage of winter legumes is grown in the Delta area above Vicksburg and across to Greenwood. Austrian winter pea and spotted burr clover are the principal leguminous crops. This area was visited during the period March 6 to 11. A small amount of root rot and leaf spot (Ascochyta pinodella) was found on winter pea in fields throughout the Delta area. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

LEAF SPOT ON SPOTTED BURR CLOVER IN SOUTHEASTERN LOUISIANA: Leaf spot (Pleospora herbarum) is fairly common in isolated patches in East Baton Rouge Parish. -- Douglas C. Bain, Emergency Plant Disease Prevention Project. February 28 - March 4.

DISEASES OF VEGETABLE CROPS IN IDAHO IN 1943

Glenn KenKnight and Earle C. Blodgett

In general the early part of the season was characterized by unusually cool, moist weather. Later weather conditions were about normal except that the fall frost did not occur until late. The following observations, except where otherwise noted, represent field visits. The senior author spent 40 days in the field away from headquarters from April to November, and the junior author accompanied him during 11 days in June and spent much of the time from July 26 until the end of the season on vegetable disease survey in connection with the Emergency Plant Disease Prevention Project.

BEANS: In southern Idaho heavy losses from damping-off resulted from a cool, wet planting season. In general the poor stands were replanted. Extensive damage caused by the root-rot complex of Fusarium and Rhizoctonia was seen generally in the bean growing areas. In some cases stands were reduced but the major loss resulted from dwarfing of the plants with premature ripening, scant set of pods, and small seeds. Sclerotinia rot (Sclerotinia sp.) was rather widespread and in some fields accounted for considerable reduction in yield. Botrytis pod rot was noted at Weiser. Red node (undetermined) was widespread but not severe. Common mosaic (virus) and yellow mosaic (virus) were noted but rarely extensively. Near Jerome one field of Refugee beans showed 30% infection and in 2 small fields of Pinto beans infection with common mosaic approached 100%. A 20-acre field of Great Northern beans near Buhl was affected by what was regarded as common mosaic. Since this field was planted to U. I. 15 beans which are resistant to this virus, there is some uncertainty as to diagnosis. Infection amounted to about 85% in addition to some yellow mosaic. Most of the acreage of beans in Idaho was planted to common-mosaic-resistant varieties. The U.S.D.A. Bureau of Entomology and Plant Quarantine Insect Laboratory, Investigation of Sugar-beet Insects at Twin Falls had

accurately predicted that curly top would be of minor importance in 1943. Consequently susceptible varieties of beans were planted and grown satisfactorily in areas where the disease is usually disastrous. Occasional plants affected by bacterial blight (Xanthomonas phaseoli) and halo blight (Pseudomonas medicaginis var. phaseolicola) were observed on experimental plots and in gardens and rarely on field beans. In a field of Refugee beans near Jerome about 3% of the plants were affected by a bacterial disease suspected of being bacterial wilt (Corynebacterium flaccumfaciens). All affected plants were dying when observed August 12. There was no evidence of any spread from initially infected plants.

CABBAGE: A trace of Sclerotinia rot (Sclerotinia sp.) was noted in a cabbage field near Twin Falls on September 19. Chlorosis (undetermined) of Chinese cabbage was noted at Emmett.

CARROT SEED CROP: Heavy losses in stand occurred as a result of root rots and a few fields were plowed up. Death of 20 to 30% of the plants from root rots was common although the accompanying reduction in yield probably was not nearly that great. The organisms most commonly associated with the rotting were Alternaria and Sclerotinia. From questioning growers it was concluded that much of the loss resulted from planting improperly stored roots.

Aster yellows (virus) was present in all carrot seed fields observed in Canyon County, ranging from 2 or 3% infected plants up to 20% in a field near Wilder and 40% in a field near Homedale. In the latter case the crop was from roots grown close to aster yellows-infected seed carrots near Wilder. Adjacent to it was another large field of seed carrots from roots grown near Melba where few seed carrots had been grown until 1943. There was only a trace of aster yellows in the seed crop from the roots grown near Melba.

Aster yellows was present also in most fields in Twin Falls County with the highest incidence observed about 12% in a field near Filer. The disease occurred also in both of 2 fields observed near King Hill in Elmore County and a few affected plants were found in a patch of seed carrots at Moscow. In all cases affected plants were severely stunted and produced no seed. Most of them died fairly early in the season. The observed incidence of infection apparently represents incidence of infection in the mother-root crop the previous season. Current season infection in the seed crop was not recognized.

An apparently new carrot disease tentatively designated as "green dwarf" occurred commonly in seed fields in Canyon and Twin Falls Counties with from a trace to as much as 6% of the plants affected. Diseased plants were conspicuous by their abnormally deep green color and stiff, erect habit. The internodes were somewhat shortened, giving the plants a compact appearance. Leaflets were broader and thicker than normal. Affected plants bloomed late, remained in bloom abnormally long, and produced few seeds. The seeds were small and curved but some were viable. The deep green color of the foliage of affected plants is retained even in dried specimens. The disease is thought to be caused by a virus.

Bacterial blight (Xanthomonas carotae) was first observed during the second week in April in several fields in Canyon County with from a trace to about 5% of the plants showing infection. Platings were made and the causal organism isolated. Later observations showed that infection occurred in all carrot seed fields observed in Canyon County with an incidence approaching 100%. Generally the disease was inconspicuous on most plants except for more or less bacterial exudate on the lower side of the umbels. Occasionally the exudate streamed down the peduncles for several inches. Some growing tips were killed and in one field killing of the upper portions of seed stalks from cankers was common and leaf spotting from bacterial blight was very serious. Infection frequently occurred in the seed umbel with consequent blasting of many seeds. It was noted that in 2 fields where the disease was especially conspicuous the yield of seed was poor. However, in both of these fields aster yellows was also abundant.

Bacterial blight was present also in both of 2 seed fields observed in Elmore County. In Twin Falls County even with careful examination no definite symptoms of the disease were found. Small patches of dodder (Cuscuta sp.) were noted in 2 fields near Parma in Canyon County.

CARROT ROOT CROP: Serious loss from root rot occurred in a few fields with some loss always occurring wherever irrigation ditches overflowed. Part of the loss might be charged to Sclerotinia, part to bacterial soft rot (Erwinia carotovora), and part to the direct effect of the water. Some rotting, apparently due at least in part to Alternaria, occurred in one field where there was no evidence of excess irrigation. In a 20-acre field near Georgetown in Bear Lake County bacterial blight caused considerable spotting of the leaves. The field was isolated and infection apparently had been seed-borne.

CELERY: Many plantings of celery were examined and most of the common troubles noted were an undetermined crown rot, Sclerotinia rot (Sclerotinia sclerotiorum), mosaic (virus), late blight (Septoria apii), and a group of virus-like troubles represented by a type of crinkle leaf, witches-broom, and yellows. Other troubles of unascertained cause appeared to be due to environmental factors.

CUCUMBERS: About 10 acres of Boston Pickling cucumbers near Lewiston were nearly a total loss because of mosaic (virus). So severe was the outbreak that many vines died and the few fruits formed were so malformed as to be worthless. Nightshade plants in and near the patch were severely affected also. This weed factor may have been of great importance because certain other plantings were comparatively free from mosaic.

EGGPLANTS: One plant near Caldwell was noted to have a discolored vascular system apparently due to fungus infection. The cortical tissue near the crown rotted away and the plant died.

HORSERADISH: Leafspot (Ramularia armoraciae) was noted.

LETTUCE SPRING TRUCK CROP: Several fields were examined in Canyon County in June. These appeared to be practically disease-free. However, several truck loads of lettuce coming into a packing shed at Parma were heavily damaged by watery soft rot (Sclerotinia sclerotiorum). Some damage from tip-burn was reported by inspectors.

LETTUCE SEED CROP: Watery soft rot occurred in all fields observed from the Oregon boundary to Twin Falls. In August it was estimated that 10 to 15% of all seed-lettuce plants in the area surveyed were killed by the disease. Very few sclerotia were found at that time, but sclerotia occurred in great abundance on the lettuce stubble with the advent of cool fall weather. Damage from the disease appeared to be related to irrigation practices. One grower whose seed lettuce crop was especially good and almost free from plants killed by Sclerotinia except for an area that had been flooded, stated that he had irrigated only 3 times after emergence. Several growers whose fields showed 20 to 60% mortality of plants acknowledged having irrigated 8 times or more.

Aster yellows (virus) occurred on all seed lettuce fields observed from the Oregon boundary to Twin Falls. The percentage of plants affected in New York and Imperial strains of lettuce in Canyon County varied from 5 to 25, with an average of about 15. Affected plants produced few seeds. The pedicels of the inflorescences were very erect instead of spreading out in a normal manner and the plants were chlorotic. Unilateral infection was common early in the season but rare later. These symptoms occurred much less commonly on the White Boston variety. However, near Parma a considerable area with a high percentage of plants showing these symptoms occurred along the edge of a White Boston field adjacent to a ditch bank bordered by wild asters showing similar symptoms.

A condition tentatively referred to as "flat stem" occurred commonly on White Boston lettuce, with as high as 20% of the plants in a field affected. The stems were flattened, sometimes trough-like. Internodes in the inflorescence were decidedly shortened, frequently resulting in a witches-broom of flowers. Plants were commonly affected unilaterally even at maturity. They were normal green in color and viable seed was produced although there may have been considerable reduction in yield. These symptoms appeared rather rarely on New York and Imperial strains of lettuce.

Mosaic (virus) was observed in several fields.

LETTUCE FALL TRUCK CROP: The most important disease factor in the fall crop of head lettuce appeared to be aster yellows. The disease occurred generally and frequently ranged from 5 to 15%. The amount of damage varied apparently as a result of infection at different stages of development of the plants. In one field watery soft rot (Sclerotinia sclerotiorum) caused a loss of 35% of the heads. Tip-burn was noted but was not severe. Considerable damage from the rootknot nematode (Heterodera marioni) was noted in a field near Nampa. Hot weather in the fall caused many heads to bolt so that many fields were only partly harvested, and some not at all because of seed stalks forming in the heads.

ONION SEED CROP: In general seed onions were good but blasting of the flowers appeared to average as much as 50% for the seed-producing area.

The percent of blasting of flowers per umbel ranged from 0 to 95%. Where an umbel was only partially blasted generally the outermost bracts and a few of the central bracts were empty. Growers generally attributed the condition to thrips injury. Although thrips probably contributed to the damage, there seemed to be a correlation between amount of root rotting and flower blasting. Rotted roots were frequently pink to purplish in color and appeared to be affected by Fusarium. No Phoma was obtained on plating. Proliferation of onion flowers popularly referred to as "frizzle-top" was widespread in occurrence but was not noted affecting more than 2% of the flowers in any one field. A condition referred to as stalk rot did considerable damage in some fields. Sunken lesions appeared on the seed stalks so weakening them that they broke and fell to the ground. The cause was not determined. A small amount of bulb rotting from Botrytis, Sclerotinia, and bacterial soft rot (Erwinia carotovora) was noted.

ONION BULB CORP: No important disease was noted on bulb onions in the field. Dodder (Cuscuta sp.) was observed in one planting. Examination of onions over the sorter and in storage showed that neck rot, Botrytis spp., was common and in some cases very destructive. A root rot followed by a basal bulb rot (Fusarium sp.) was noted.

PEAS: In Idaho County the spring was late and wet, and peas were planted late under moisture and temperature conditions favorable to Aphanomyces root rot. About 800 acres or approximately 5% of the pea crop acreage in the county was heavily damaged by root rot, and slight to negligible damage occurred in many other fields. On one 380-acre field, the third consecutive year in peas, the seedlings reached a height of only 3 to 6 inches and all died, very few having produced any pods. Thirty-five acres of a 90-acre field in Nez Perce County were rather heavily damaged. Peas were grown in the greenhouse in soil from an infested field in Idaho County. The peas developed root rot and died prematurely. Several platings were made of the roots and Aphanomyces euteiches was isolated and cultured. In November Aphanomyces root rot was conspicuous on volunteer Alaska peas on fields where damage had occurred. Under field conditions Austrian winter peas appeared to have escaped damage from Aphanomyces root rot even in the Grangeville area. Under greenhouse conditions Austrian winter peas have regularly developed symptoms much later than have Alaska peas. Slight damage from Rhizoctonia root rot occurred on experimental plots at Moscow.

In northern and central Idaho downy mildew (Peronospora viciae) [P. pisi] was observed in many pea fields, although generally only a small percentage of plants were affected. However, in one field near Grangeville, where spring rainfall had been considerably above normal, 90 to 95% of the plants had leaf lesions with 3 or 4% of the plants infected systemically. The disease was conspicuous only early in the season and probably had little effect on yield.

Powdery mildew (Erysiphe polygoni) was much more severe than usual. The disease was general in northern Idaho. It became severe only after the crop was nearly made, and since yields were good, growers seem to believe

that the disease caused little, if any, loss in yield. It seems probable that at least in late-planted peas in low areas, the disease caused some shrinkage in size of the seed.

Occasional plants affected with mosaic were observed on surveys. Damage to peas from virus diseases appeared to be negligible. Damage from Sclerotinia was widespread in Idaho, occurring commonly on both edible and Austrian winter peas. Especially heavy damage resulted in one field of Perfection peas near Kimberly and in another near Hagerman sclerotia were produced in great abundance. In northern Idaho girdling of 2 to 5% of the pea stems with consequent death of the vines before seed production was common. Considerable sliming of the lower leaves was observed in Alaska and First-and-Best varieties on all fields with heavy stands in Idaho and Nez Perce Counties. The phase of the disease was far more conspicuous on Austrian winter peas, probably because of the heavier stands. Botrytis was noted occasionally in association with Sclerotinia. Yields of Austrian winter peas were good even where Sclerotinia was apparently severe. The disease became conspicuous as the crop approached maturity and loss in yield may have been slight. Apothecia of the fungus were found in abundance in July in Idaho County. Apothecia also developed commonly on soils from Idaho County used for root rot studies in the greenhouse. One soil sample received from Ashton was heavily infested with the pea wilt-organism.

PEPPERS: Mosaic (virus) was seen rather generally, and in some plantings caused considerable loss from reduction in size of plants and fruits. One pepper plant at Moscow was noted to have a discolored vascular system probably due to fungus infection.

PUMPKIN: No field diseases were noted. Storage rots were caused principally by Botrytis and Sclerotinia.

RAPE: White blight (Sclerotinia sp.) was commonly present on stems and panicles of the rape seed crop in Nez Perce, Lewis, and Idaho Counties. In many fields only a bare trace was found, but in one field near Ruebens 30% of the plants were affected, and in another 90% by count. When first observed July 13 most of the stems were blighted about midway up from the ground, with some affected only near the top of the panicle as though infection had taken place by conidia or ascospores. Thereafter, there appeared to be no spread, but the blighting of the stems continued downward, generally making contact with the ground. The pith of infected stalks was commonly filled with sclerotia in addition to the numerous sclerotia borne externally on blighted sections of the stem. The stems were girdled only after the seed crop was nearly made, but even so it caused some shriveling of seed. On July 13 some seed was harvested from the most severely affected field from both healthy and diseased plants, although only seed from the former was fully ripe. After drying and threshing 1000 seeds from diseased stalks weighed 13% less than the same number from healthy, though not fully ripe, stalks.

RHUBARB: A dozen plants in a garden near Fenn were all seriously damaged by gray mold (Botrytis) crown and petiole rot. Several of the plants appeared destined to die when observed July 14. One plant in each of 2 gardens in Moscow were observed to be affected by the same disease.

SQUASH: In a planting at Hammett curly top affected about 3% of the Italian squash vines and at least 35% of a scallop edge variety. Storage rots noted later on Hubbard, Banquet, and Winter Banana were caused principally by Botrytis, Sclerotinia, and Rhizopus.

TOMATOES: Occasional plants with foliage and fruit symptoms of spotted wilt (virus) were observed in several gardens at Moscow. Specimens of fruit with severe symptoms of spotted wilt were received from Harpster in Idaho County, the grower stating that her entire crop was ruined. One plant near Pocatello showed a severe foliage necrosis which was not identified. A planting at Emmett was severely affected with a vascular wilt tentatively diagnosed as Verticillium wilt. Curly top (virus) was seen widely scattered but generally the damage was the least ever recorded. In a planting at Hammett about 3% of Marglobe and 15% of Earliana plants were affected. Blossom-end rot (non-parasitic) was seen fairly generally but was severe in only a few cases, mostly in northern Idaho.

TURNIPS: Severe infection by powdery mildew (Erysiphe polygoni) was noted in a garden near Caldwell.

DISEASES NOT RECORDED IN IDAHO UNTIL 1943: Bacterial wilt (?) (Corynebacterium flaccumfaciens) of beans; bacterial blight (Xanthomonas carotae) and green dwarf (undetermined) of carrots; sclerotinia rot (S. sclerotiorum) of celery; flat stem (undetermined) and rootknot (Heterodera marioni) of lettuce; white blight (Sclerotinia sp.) of rape; and verticillium (?) (Verticillium sp.) of tomatoes.

DISEASES KNOWN TO HAVE OCCURRED IN IDAHO PRIOR TO 1943, BUT THERE APPEARS TO BE NO PUBLISHED REPORT: Botrytis blight (Botrytis sp.) on beans; mosaic (virus) of cucumbers; ramularia leaf spot (Ramularia armoraciae) of horseradish; botrytis blight (Botrytis sp.) of peas; Botrytis and Sclerotinia fruit rots of pumpkins; Botrytis, Rhizopus, and Sclerotinia fruit rots of squash; and spotted wilt (virus) of tomatoes.

SOME DISEASES RECORDED IN IDAHO BUT NOT FOUND IN 1943: Rust (Puccinia asparagi) of asparagus; rust (Uromyces appendiculatus) of beans; black rot (Xanthomonas campestris) of cabbage; macrosporium leaf spot (Macrosporium [Alternaria] carotae) of carrots; downy mildew (Bremia lactucae) of lettuce; downy mildew (Peronospora destructor) of onions; ascochyta (Ascochyta sp.) and rust (Uromyces pisi) of peas; and early blight (Macrosporium [Alternaria] solani) of tomatoes.

SOME IMPORTANT VEGETABLE DISEASES OF OTHER NORTHERN AREAS NOT YET RECORDED IN IDAHO: Anthracnose (Colletotrichum lindemuthianum) of beans; cercospora leaf spot of carrot (Cercospora carotae); early blight (Cercospora apii) of celery; clubroot (Plasmodiophora brassicae), black leg (Phoma lingam),

yellows (Fusarium conglutinans), and ringspot (Mycosphaerella brassicicola) of crucifers; anthracnose (Colletotrichum lagenarium), bacterial wilt (Bacterium tracheiphilum) [Erwinia tracheiphila], downy mildew (Peronoplasmopara cubense) [Pseudoperonospora cubensis] and macrosporium leaf spot (M. cucumerinum) [Alternaria cucumerina] of cucurbits; phomopsis fruit rot (P. vexans) of eggplants; pink root (Phoma terrestris), smudge (Colletotrichum circinans) and smut (Urocystis cepulae) of onions; and anthracnose (Colletotrichum phomoides), bacterial canker (Corynebacterium michiganense) and fruit spots (Xanthomonas vesicatoria and Bacterium tomato), and late blight (Phytophthora infestans) of tomatoes.

IDAHO AGRICULTURAL EXPERIMENT STATION; and
EMERGENCY PLANT DISEASE PREVENTION PROJECT

A BOTRYTIS LEAF-SPOT OF ONIONS NEW TO FLORIDA

Erdman West

A small block of Grano onions under overhead irrigation on the Agricultural College grounds at Gainesville showed signs of a leaf-spotting disease about the end of February. There was a general flecking of small, gray or whitish, shallow spots on all except the youngest leaves and about 5% of the leaves exhibited round or elliptical, dead, brownish areas 2 to 4 cm. long. The distal portion of leaves showing the larger spots was wilted and dying in most cases. No fungus was found on the small white flecks but in the center of the large spots there were numerous conidiophores of a Botrytis which, in all morphological characters, corresponded to B. squamosa Walker.

According to Walker[1] high humidity for several days is necessary for leaf infection of onions with this organism. This condition was well fulfilled by the unusually foggy mornings that occurred in this area for the 3 weeks prior to the above observations. Leaf-spotting of onions has been recently reported[2] from England where the same organism has been found responsible and similar humid conditions are not uncommon. In all other cases reported the fungus has caused a neck-rot of white or light-colored onions.

The onions in the Gainesville planting were grown from seed. No other onions are planted nearby. The same soil was used to grow onions, leeks, and garlic previously but the disease has not been observed on any of these crops in past seasons.

No other species of Botrytis was found on any of these plants. There was no infection with downy mildew (Peronospora destructor (Berk.) Casp.). A small amount of Macrosporium occurred on the oldest dead leaf tips. Although inoculations have not been made there seems little reason to doubt that B. squamosa was responsible for the disease in this block. There ap-

---

[1] Walker, J. C. Botrytis neck rots of onions. Jour. Agr. Res. 33:893-928. 1926.

[2] Hickman, C. J. & D. Ashworth. The occurrence of Botrytis spp. on onion leaves with special reference to B. squamosa. Trans. Brit. Myc. Soc. 26: 153-157. 1943.

pear to be no records of the occurrence of this fungus on onions or related crops in Florida. It has been reported from Wisconsin, Illinois, and Ohio in the United States, and Holland and England in Europe. Considering the requirements for infection, it does not seem likely that it will become a serious disease in Florida.

FLORIDA AGRICULTURAL EXPERIMENT STATION, GAINESVILLE.

ONION "BLIGHT" IN THE COASTAL BEND (ROBSTOWN) AREA OF TEXAS

G. E. Altstatt

The principal trouble with onions in this area is commonly called "blight" (cause not definitely known). This trouble has been observed for several years, and in the wet seasons, has caused considerable damage.

This season, blight was first observed on February 18, in the Sodville area of San Patricio County, as previously reported. Since then onions have been examined in Nueces County, and blight symptoms have been observed in varying degrees in all fields visited. Close contact has been kept with some of the fields close to Robstown, and the progress of the blight observed. Development has been rapid, and on February 24, the first purple lesions were found. The purple coloring is one of the symptoms indicating that the trouble may be purple blotch. A description of the symptoms, in order of their appearance may be of value.

Symptoms. 1. The first symptoms are evidenced by irregular, cloudy patches of light green at intervals on the onion leaf. These patches give the impression that the epidermal cells have been affected only, and that the pigment has been removed. (They resemble to some extent, thrip injury, although they do not take on the silvery appearance of thrip injury. In fields where this symptom has been pronounced--on older onions--there have been few or no thrips present, and where present, the population was insufficient to cause the amount of damage evident).

2. Following the first light patches, small pin-point spots appear. These spots enlarge to approximately 1/4 inch diameter. These spots are devoid of chlorophyll, and extend through the leaf. The tissue appears transparent.

3. About the same time as the white spots appear, the leaf tip begins to shrivel. Whether or not there is a direct connection with the tip withering at this stage cannot be ascertained.

4. About the time that the white spots attain the size of 1/4 inch, the surrounding tissue begins to become flabby and shrivel. This shrivelling spreads laterally and vertically in the leaf, usually more in the latter direction, and extending until many such areas coalesce, often showing an irregular streak down the length of the leaf. The growth of these areas is very rapid in wet and rainy weather. After rains, or heavy fogs, the affected tissue appears watersoaked, and the leaf goes down rapidly, the necrosis usually working to the base of the leaf within 24 hours. After a dry period the leaf is shrunken and brown. The white spots are still evident and the tissue surrounding the spots is often creamy yellow to tan to brown. These areas show abundant sporulation ..

of Macrosporium species.

5. Spots apparently developing, but not sufficiently developed to cause the total loss of the leaf before the weather becomes dry, seem to be arrested in development, and turn from tan to purple. It appears that this disease may be purple blotch by this symptom -- but that the purple coloration only appears when the advance of the organism is slowed by adverse weather for its development. (This theory was advanced by Dr. Godfrey after he had made observations in this area in 1943, and is substantiated by my observations.)

Examination of Onion Tissues. Tissue examinations by free hand sections and microscope have been made. Findings recorded are reported according to symptom paragraphs as numbered in preceding account:

1. The cloudy spots (areas) show no fungus invasion -- no mycelium, although germinating spores have been observed on onion leaves during moist weather.

2. The small white spots observed show no mycelium. Germinating spores of the Alternaria type have been seen on these spots. Hyphae have been seen growing on the surface and apparently gaining entrance through stomata.

4. The shrivelled yellow-green areas which develop around the white spots show abundant mycelium throughout the tissue. As these spots enlarge, the Macrosporium type spores begin to be produced on the surface in great numbers.

5. The purple spots usually show abundant fruiting. In some instances the spots take on a definitely brown to black color, probably due to a secondary invasion.

There have been 2 types of spores observed on the large lesions of which a typical Alternaria type is the most common, generally light-colored, with a long tail. This type has never been seen in chains, but is always borne singly.

The second type of spore seen on some lesions, in lesser numbers, is an oblong, dark spore of numerous cells. These also appear to be borne singly, without stipe or tail.

Discussion. In the preceding account of observations, certain stages or phases of symptoms enumerated may not be related at all, and in fact we may be dealing with one or several different diseases; i. e.

(a) While the cloudy areas usually include one or more white spots, white spots do appear without the cloudy area. Cause not known.

(b) The larger lesions (see 4) include white spots, but the white spot may be caused by some other agent, and only furnish a mode of entrance for the fungus. No mycelium has been found in these spots, and while the spots are often located in the cloudy areas, they are found without. The relationship needs to be established.

(c) The purple-blotch lesions seem to be definitely associated with the infection which originates in the white spot. However, purple-blotch lesions occur by themselves in some instances. Such isolated spots might prove to be purely Macrosporium [Alternaria] porri lesions, while the blotches appearing on the large (leaf-length) lesions could possibly be the result of a secondary invasion by M. porri. Generally, however, it is believed that the large lesions are caused by M. porri, but that the

growth under moist conditions has been so rapid that the purple coloring has not been produced. Purple colors are more prominent and most frequent during dry periods.

The symptoms as described are typical of the condition under dry land farming conditions in the Robstown area.

"Blight" in the Rio Grande Valley, Laredo, and Winter Haven Districts. The "blight" symptoms are approximately the same on onions in the Lower Rio Grande Valley. In the Laredo area (irrigated) there was less "blight" and the cloudy areas were less common. In the Winter Garden the cloudy areas were practically rare, and the streaks the length of the leaf were more continuous, with the intermediate spots less conspicuous, or, as in some cases, appearing mainly in the upper 1/4 of the leaf. Purple blotches were observed in every field examined but were not numerous.

The small white spots and exudate (crystals) were common on onions grown under irrigation in the Winter Haven area, but under Robstown and Lower Valley conditions crystals or exudate were seldom seen.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

ONION SPRAYING FOR MILDEW AND THRIPS CONTROL IN NEW YORK STATE

Wm. E. Rader and Donald Ashdown

Onion mildew, caused by the fungus Peronospora destructor (Berk.) Caspary, is present nearly every year in New York, and is destructive in 2 or 3 years out of 5. No spray or dust program has ever given effective control on the onion bulb crop in the East. On the West Coast some success has been reported on the crop grown for seed by spraying with Fermate, Spergon, and Malachite Green; while the related downy mildew of tobacco has recently been controlled by spraying with bismuth subsalicylate. These 4 compounds, therefore, together with another fungicide, Catex (a phenolic distillate of southern pine), were compared on 2 farms in Cayuga County, New York. The following amounts of these materials were used per 100 gallons: Fermate 2 lbs.; Spergon 2 lbs.; Malachite Green 8 oz.; bismuth subsalicylate 1 1/2 lbs.; Catex 2 gals., and 4 gals.; and Fermate 1 lb. plus Catex 2 gals. Grasselli Spreader and Sticker was added to each of these fungicides at the rate of 0.5% which resulted in good coverage of the onion foliage. The treatments and the check were replicated 3 times in a 4 x 6 randomized block, each plot being 10 rows wide and a rod long. The applications were made with a knapsack sprayer at the rate of 150 gallons per acre on the following dates: June 22, July 1, 7, 14, and 21.

By August 12, all of the commercial plantings in this area showed symptoms of mildew. The tops of the onions were beginning to go down at this time and no difference in the severity of the blight could be detected between any of the treatments and the checks, or the adjacent untreated rows in the same field.

The plots on one farm were harvested on August 26, and weights taken to

determine any injury that might be attributed to any of the treatments. The mean number of bulbs per plot varied from 528 to 706, and the weight from 43.7 to 64.8 pounds. Analysis of these data has shown no significant differences between any of these treatments and the check in either numbers or weights of bulbs.

These same tests conducted on the second farm included tartar emetic (2 lbs., plus 4 lbs. sugar per 100 gals. spray) as a thripsicide in combination with the Fermate, Spergon, and Catex. Mildew developed in this field also, but again there were no observable differences in its severity on the variously treated plots and checks. Very few thrips were noted and no data obtained on the effectiveness of these materials as thripsicides.

Some information has been obtained on the effectiveness of Catex and tartar emetic as thripsicides from tests conducted in Oswego County. The sprays employed were: Catex (2 gals. :100 gals.), tartar emetic-sugar-water spray (2 lbs. :4lbs. :100 gals.), and tartar emetic-sugar-water (2:4:100) plus Catex, 2 gallons in 100 of spray. Each treatment was replicated 4 times in plots 36 rows wide and 45 1/2 feet long, which were randomized in a 4 x 4 Latin square. Five applications of spray were made with a knapsack sprayer at the rate of 100 gallons per acre on the following dates: June 21-22, 28, July 6, 12, and 20.

Records on the thrips populations in these plots were taken on August 9 to 11. Counts were made on 25 plants in each plot. The mean number of thrips per plant in the check plots was 59.82, in the tartar-emetic plots 13.42, in the Catex plots 22.70, and in the tartar-emetic plus Catex plot 30.20. The differences in thrips population levels indicate that the following three treatments were better than the check at odds of 99:1: (a) tartar emetic, (b) Catex, (c) tartar emetic plus Catex, and (d) that tartar emetic alone gave better control than the tartar emetic plus Catex. On the other hand Catex alone was significantly better than the combination at odds greater than 19:1 and similarily the tartar emetic alone was significantly better than the Catex alone at these odds. The high alkalinity of Catex may have acted unfavorably on the tartar emetic when they were combined.

The mean weights of the bulbs harvested from these plots were: check 1209.5 pounds, Catex 1206.7 pounds, tartar emetic 1206.5 pounds, and tartar emetic plus Catex 1246.2 pounds. Statistically there was no significant difference in yield (at 19:1 level) between any of these treatments. This would indicate that Catex is capable of significantly reducing the thrips population with no detectible injury to the crop, but that it is not so effective as tartar emetic as a thripsicide.

There was no observable difference in the severity of the mildew among any of these treated plots and the checks.

CORNELL UNIVERSITY, ITHACA, NEW YORK

A VIRUS DISEASE OF LETTUCE OCCURRING IN INDIANA GREENHOUSES

R. W. Samson

Numerous specimens of a virus disease of lettuce growing in Indiana greenhouses have been submitted to the writer during the past 2 years for identification. The symptoms shown by this disease are suggestive of those described for the brown blight and spotted wilt diseases on lettuce. Infected, greenhouse-grown plants are slightly to severely stunted, frequently with a one-sided development of the inner whorls of leaves. Necrotic spots and areas of necrotic veins occur on some of the leaves, sometimes on one side of the leaves resulting in lateral curvature. Diseased plants that were potted and allowed to produce seed developed a mosaic mottling of the leaves on the seed stalks, followed by some necrotic spotting.

The disease has been found infecting both the Bibb and Grand Rapids types of lettuce. Crops with from a trace to 60% of the plants infected have been reported to the writer.

The disease has proved to be rather readily transmitted to Bibb and Grand Rapids lettuce by juice inoculation with carborundum powder. It does not appear to be as readily transmitted by this means to lettuce as tomato mosaic is to tomatoes. This suggests that alternate handling of diseased and healthy lettuce plants in transplanting and cultural operations may not be an important factor in its spread in greenhouses. It has been noted in abundance in lettuce plantings growing in soil recently steam-disinfected. This distinguishes it from the brown-blight disease which Jagger controlled by steam disinfection of soil.

So far, attempts have been made to transmit the lettuce virus disease only to tomato, jimson weed, cucumber, and Nicotiana glutinosa, without success. These are known hosts of the spotted-wilt virus. A total of over 250 plants have been grown so far from seed from Bibb lettuce plants infected with the disease, with no evidence of seed transmission. An abundance of green aphids, possibly a species of Macrosiphon, has been noted on some greenhouse lettuce crops containing a considerable number of virus-diseased plants. In fact, there is evidence of an inverse relation between the abundance of the disease and extent of control of aphids on the greenhouse crops. Three of 5 Bibb lettuce plants recently infested with aphids from diseased plants have developed symptoms of the disease.

Growers so far interviewed by the writer have expressed dissatisfaction with fall crops of lettuce started with seedling transplants grown in outdoor beds. It may be that the poor performance of such crops is due to inoculation of a high percentage of the seedlings with the virus disease by aphids migrating from weed hosts. One greenhouse grower of leaf lettuce, previously experiencing serious losses from the disease, reports little or no trouble with it in his crops following careful exclusion of aphids from seedlings started for the fall crop.

The writer is making further attempts to identify the disease, and to determine its host range, possible weed hosts, and means of transmission. Available and acceptable varieties or strains of lettuce for greenhouse culture are being tested for resistance to the disease.

PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION, LAFAYETTE, INDIANA

DISEASES REPORTED IN GREENHOUSE-GROWN VEGETABLE CROPS

INDIANA: Lettuce, radishes, and tomatoes in greenhouses near Indianapolis and Lafayette, were examined during the week ending March 11.

A juice-transmissible virus disease (temporarily called "brown-blight") (see page 203), of lettuce was prevalent in 2/3 of the greenhouses examined at Indianapolis. In one house about 75% of the plants in certain ranges were infected severely and were unmarketable. There appears to be a relationship between the abundance of aphids and occurrence of this virus disease. R. W. Samson recently has demonstrated that the aphis occurring on lettuce is a vector of this disease. Evidently in a consideration of measures for control emphasis should be placed on control of aphids. In occasional plantings a basal stem-rot (Botrytis sp.) caused a 5 to 20% loss of the transplanted lettuce plants. In one greenhouse-range approximately 5% of the lettuce was lost from tip-burn and grey mold (Botrytis sp.). Small tomato plants planted between the lettuce apparently were free from diseases.

Radish leaves were infected severely with Albugo candida (white rust) in a greenhouse at Lafayette. -- R. C. Baines, Emergency Plant Disease Prevention Project.

ILLINOIS: During the week ending February 26 crops of cucumbers, lettuce and tomatoes in greenhouses in northeastern Illinois were examined for diseases, in company with D. B. Creager of the Illinois State Natural History Survey.

Tomatoes for the spring crop were being transplanted in greenhouses at Kankakee. Occasional plants showed a banding of the veins with a deep yellow color, which might be caused by a virus. The plants appeared to be free from the ordinary mosaic. Approximately 50% of the small tomato plants in one half of a greenhouse-range near Maywood were infected severely with mosaic. In other greenhouse ranges between 5-10% of the tomatoes were infected with mosaic. Lettuce in one house was apparently free from diseases.

In a greenhouse establishment near Aurora, tomatoes (first cluster starting to color) and cucumbers, that were being harvested, were apparently free from diseases. In a second establishment near Aurora from 10 to 15% of the tomato plants (3 feet tall) were infected severely with mosaic. In some rows 50% of the plants were infected with mosaic. Certain workers at this place chewed tobacco, which very likely was a source of initial virus inoculum. The cucumbers in one range were free from diseases.

Three greenhouse establishments near Streator were inspected. In one establishment a trace of the tomato plants, which were about 18 inches high, were infected with mosaic, and in the second the young tomato plants were apparently free from disease, while in the third 5% of the plants 18 inches high showed symptoms of mosaic, 5% showed a banding of the veins with a deep yellow color, and an occasional plant was infected with what appeared to be streak.

Approximately 5% of the lettuce in a greenhouse near Streator was in-

fected with "brown blight", a transmissible virus disease (see page 203). This apparently is the first report of this disease of lettuce in Illinois. In Indiana "brown-blight" is very prevalent on lettuce in greenhouses. -- R. C. Baines, Emergency Plant Disease Prevention Project.

MISSOURI: Several days during the week ending February 19 were spent in company with Mr. Clyde Cunningham, Assistant County Agent, Jackson County, visiting the greenhouses devoted to the production of vegetables crops in the Kansas City area. All ranges, except one having an approximate area of 12,000 square feet, were planted to lettuce. The Grand Rapids variety is grown almost exclusively in this area. A number of greenhouse operators also produce mushrooms on a commercial scale and several mushroom houses were also inspected.

Lettuce. The 2 most prevalent and destructive diseases observed on this crop were gray mold (Botrytis cinerea), called brown stem rot by the growers, and "drop" (Sclerotinia sclerotiorum). Both of these diseases were observed in all the greenhouses visited. Gray mold appeared to be the most destructive at the moment, accounting for a loss of from 5 to 25% of the recently set lettuce plants, averaging approximately 8 to 10% for all houses. While this disease is apparently most serious on young plants and accounts for a considerable reduction in stand, it was also observed to be responsible for some damage to mature "heads" in one range. Owing to the slow movement of the crop on the markets, this particular planting had been allowed to grow somewhat longer than is generally practiced. The stand had become very dense and tipburn had developed on the outer, oldest leaves. Gray mold appeared to follow this injury, causing a soft, slimy decay of these outer leaves. Many heads were affected and much trimming was necessary to make the lettuce marketable.

"Drop", although not very destructive at the time of these visits, has been and is now a potentially serious problem in a number of the greenhouses. In about one-half of the houses visited there were localized spots in which the pathogen was established and causing considerable damage. Considering all ranges, however, no more than a 2% loss could be attributed to this disease.

Steam sterilization of the soil should give a good measure of control for both of these diseases. This practise has been adopted in this area in recent years, but it is not employed with any regularity and probably no more frequently than once in 12 months. Reports of the growers indicate that their attempts to date have not been completely satisfactory and a number, because of the disappointing results secured, question the value of this practise.

In 2 of the ranges much of the lettuce in certain beds remained dwarfed and exhibited no tendency to form "heads". The root systems of the affected plants were poorly developed and in general, brown in color. Examination of the primary root revealed a browning of the vascular tissue. The discoloration extended a short distance upward into the stem, where the pith was also discolored and in advanced stages, was shredded and disintegrated. There was no evidence of decay, as such, and microscopic examination of the tissues involved failed to reveal the presence of any microorganism. All evidence seemed to indicate some type of mineral dis-

turbance. The soil in the beds affected had been steam-sterilized some months earlier and, according to the growers, had produced "normal" crops prior to and immediately following treatment.

Tomatoes. In the single range devoted to tomato culture the plants showed striking symptoms of apparent injury resulting from the volatilization of growth-promoting substances used to insure fruit set. The range consisted of 2 separate houses, each house having received a different treatment. In one house, 145 by 45 feet, 20 mg. of dichlorophenoxyacetate was volatilized on a hot plate. The plants at the time of treatment were producing the second blossom cluster. All plants at the time of these observations (about 3 weeks after treatment) showed a marked distortion and twisting of the stems and leaf petioles; blistering of the epidermis; profuse initiation of adventitious root primordia underneath the epidermis of the stems; development of typical "fernleaf" foliage and a marked distortion of the fruit that developed subsequent to treatment. The foliage and fruit on these plants that had developed prior to exposure to the chemical was not affected and was normal in appearance. There was no indication at the time of these observations that the effects were transitory, for there was no evidence that the plants were "reverting" to the production of foliage that might be considered normal. It was observed that the plants nearest the position of the hot plate used to volatilize the chemical were most seriously affected, but no plant exposed escaped injury.

In the second house, 90 x 45 feet, 1 gm. of methyl B naphthoxyacetate was volatilized on a hot plate, with a 16-inch fan employed to disseminate the vapor. The plants in this house were not so severely affected as in the previously described situation. There was no marked distortion of the stems nor any blistering of the epidermis. However all plants[1] showed "fernleaf" and mosaic symptoms of the foliage developed subsequent to the treatment. None of the blossom clusters (the second) set fruit as a result of the treatment and only those subsequently developed (the third) that were individually sprayed with a growth-promoting substance developed fruits. All foliage and fruit developed prior to the treatment remained unharmed.

In both houses a few fruits showed blossom-end rot (physiological) and a moderate rootknot nematode (Heterodera marioni) infestation was observed.

Mushrooms. The mushroom beds observed appeared to be relatively free from disease except in one house in which approximately 25% of the beds showed the presence of the "bubble" disease, (Mycogone perniciosa). This disease was causing considerable damage in the beds affected, and according to the grower had caused an estimated $1000 loss to date (approximately 2000 pounds of mushrooms). The disease seemed to be most damaging in beds in which non-sterilized casing soil was used. However it was present to a lesser extent in a few of the beds that had been prepared with steam-sterilized casing soil. -- T. W. Bretz, Emergency Plant Disease Prevention Project.

---

[1] A group of old plants, remaining from an early fall planting and situated in the far end of the house in relation to the position of the hot plate and fan, showed no evidence of injury, even on the young, actively growing terminals exposed during the treatment.

VEGETABLE DISEASES IN WINTER TRUCK-CROP AREAS

SOUTH CAROLINA: The vegetable-growing area in Charleston and Beaufort Counties was visited February 14 to 19. The severe freeze of late December had ruined the cabbage and broccoli crops which normally would be moving at this time. The only vegetables being marketed were kale and broccoli rabe.

Hundreds of acres of Cabbage were still in the field. It was in all cases badly infected with downy mildew [Peronospora parasitica]. Although a large percentage of the cabbage acreage had been plowed up, the delay in destroying the fall crop may constitute an important source of abundant inoculum for the spring cabbage which is set out and growing.

The Collards crop is about harvested; most of it is starting to bloom. Downy mildew has destroyed the lower leaves of practically all the plants, but the marketing quality and quantity do not seem to be affected.

Kale was not affected by the low winter temperatures and has developed rapidly. Only the lower leaves are spotted here and there by downy mildew. No other diseases were noted.

Broccoli rabe is a type of turnip, the tops of which are marketed when in flower. It is apparently grown exclusively in the Charleston-Beaufort area. The most serious disease is an Alternaria leaf spot which is 100% prevalent and is quite serious although no control measures are attempted. Although this disease has been common for several years, Dr. G. M. Armstrong does not think it has been reported. A trace of powdery mildew [? Erysiphe polygoni] was found in one field. This was the first time powdery mildew had been observed on the crop. Mosaic or at least mosaic symptoms were commonly seen, but the crop is genetically so heterogeneous that it is difficult if not impossible to distinguish in the field between mosaic and hereditary chlorosis.

Much of the Lettuce in this area has been drilled in the field instead of planted in beds and transplanted. This is a new practice in the area. Seedbeds are all in the open, although some growers select protected sites for the beds. The transplanting had been completed a week or two earlier, when good weather prevailed. Very little loss due to damping-off was reported, and field plantings observed were invariably good stands. Downy mildew (Bremia lactucae) was the only disease observed. It occurred in trace amounts in 2 fields. It may become important at heading time.

Miscellaneous. Spinach and beet seedlings were just emerging in field plantings. Although some damage had been done by heavy rains in washing the beds, stands were satisfactory. Good stands of English peas were also observed. Practically no seed treatment is practiced.

Tomato and peppers were germinating in the seed beds and some damping-off was observed. It was too early, however, to obtain an adequate idea of the extent of damage. -- R. E. Atkinson, Emergency Plant Disease Prevention Project.

GEORGIA: (Report for the first half of February). From February 1 to 15 the writer was accompanied by Dr. W. D. Moore of the Tifton Station and by Dr. John R. Jackson and Mr. Coyt Wilson of the Alabama Station. Their opinions are incorporated in the report for this period.

Tifton Area -- Weather conditions throughout January and February in the Tifton area have been most favorable for "damping-off" troubles. Dr. Jackson reported earlier that 90% of the onion plants in a large field near Tifton had "damped-off" from Pythium.

Three Cabbage plant-fields totaling about 150 acres were surveyed in the Tifton area. The plant stand, as a whole, was found to be good, in fact the seeding was excessively heavy. A high percentage of the seedlings were found to be affected by wire stem (Rhizoctonia solani). It is impossible to state the extent of losses. It was estimated that the yield of plants in the first pull will not be lessened. However, subsequent pullings are bound to be affected. Approximately 100% of the plants in the same fields were infected by downy mildew (Peronospora parasitica). The losses from this disease are nil.

Coastal Area -- A survey was made of winter truck crops in the Richmond Hill Farms, near Savannah; the Butler Island Farms, near Darien; and the Savage Plantation, near Woodbine. These farms are made up of reclaimed rice fields, are low and very fertile. The fields are drained by a network of canals and ditches and in the case of extremely heavy rains the water is pumped out of the fields. One would expect disease problems to abound, for every condition thought to be conducive to such troubles as damping-off, Sclerotinia, etc., exists in these fields. However, few diseases were found.

The Cauliflower had mostly been harvested and little time was spent in these fields. Most of the plants had downy mildew but it had caused no damage.

A number of fields of Cabbage, ranging from young to mature, were checked thoroughly. Downy mildew was found in all fields. Drop (Sclerotinia sclerotiorum) was found scattered in a 10-acre field at Darien; the loss was possibly 5%. Considerable loss in one field of mature cabbage near Savannah was caused by bacterial soft rot [Erwinia carotovora] following freezing injury.

In addition to disease, there is a matter of importance that I feel should be mentioned here. All of the cabbage growers visited, and they are big operators, were experiencing heavy losses, up to 25 to 40%, from varietal mixtures. Every varietal type imaginable was to be found, and there seemed to be no particular predominating variety. As would be expected, losses are being incurred from the tremendous variation in date of maturity and in quality of the various types present.

About 15 to 20 acres of Onion plants were observed at the Butler Island Farms. The stand was excellent and growth unusually good. Mildew (Peronospora schleideni) [P. destructor] was just beginning to show up in a mild but general form. Little damage is anticipated since the crop is now being pulled.

About 200 acres of Lettuce in the thinning stage of growth were surveyed in these locations. As stated above, conditions were found to be "ideal" for damping-off troubles, yet there were no diseases of any kind to be found; whereas, post-emergence damping-off is of major importance

on truck crops in the inland areas of south Georgia, as indicated by the report from the Tifton area. This observation is given here for the value that it might have in conducting the soil microflora studies that will be necessary before much progress can be made toward combating post-emergence damping-off.

(Report for February 16 to 29). Several thousand acres were planted to Turnips for salad greens in the Thomasville, Georgia area this winter. The bulk of the crop will reach the peak of harvest sometime between March 1 to 15. The season for the past month has been conductive to good growth and a high quality crop is being produced. I observed some 500 acres in various stages of growth in 20 fields. Disease troubles were found to be at a minimum. White spot (Cercosporella albo-maculans) was found scattered in most fields with little to no damage. However, one field of about 15 acres was found in which the leaf crop is a total loss from a combination of a severe attack of white spot and aphid injury. The crop is being left for seed.

About 200 acres of English peas, some in early bloom, but mostly about 4 to 5 inches high, were observed near Cairo. Damping-off was general in all fields; the loss in plants was about 5%. A high percentage of the plants were found to have Ascochyta root rot (identified by Dr. J. L. Weimer). The above-ground parts of the plants were not diseased.

Downy mildew continues to be active in the Cabbage plant-fields and in some cases is causing some damage.

About 5% of the Onion plants were found damped-off in a large field (about 30 acres) of onion 1 to 2 inches high near Tifton. Downy mildew was found scattered in a nearby field of older onions. -- G. H. Stone, Emergency Plant Disease Prevention Project.

SOUTHERN FLORIDA EAST COAST AREA: Bean. This year's acreages of beans in the Homestead area is about 7,500.

Rhizoctonia solani, stem rot, is still a very serious problem on young and older beans in the field. This disease is seen on the pods occasionally. North of Pompano one large grower estimates a 50% loss on 1000 acres of beans from this disease. The roots are rotted, the fertilizer is not absorbed, and the plants are yellowed. Many of the plants break off at the soil line during the first picking and subsequent pickings are lost.

Sclerotinia sclerotiorum, watery soft rot, has continued to spread and has been found south of Homestead on new land and north to just below Miami. Thus, a large acreage of land is threatened for bean growing. It is very difficult, if not impossible, to estimate losses from the disease. One reason is the "nesting" which may occur after the beans are shipped. One large packer of Homestead stated that some cars go through all right but on others a 25 to 50% rebate is demanded because of "nesting" due to this fungus. The fresh market buyers discriminate against an area in which this disease occurs, and if the canners will take the beans (they were refusing some of the beans) the price may be lower by as much as $1.50 or more a bushel hamper. On 2700 acres of beans in the worst affected area east of Homestead the owners, at the present time, estimate their loss from this disease to be 25% and were threatened with much greater losses from lack of a market.

Potato. There are about 6,000 acres of potatoes in the Homestead area.

An average of loss estimates from growers representing more than one-third of this acreage follow. The expected yield for the area is 40% of normal or about 480,000 bushels. The loss from drowning (early in the season) and frost was 30% or about 361,000 bushels. The loss from late blight (Phytophthora infestans) was 30%, or about 361,000 bushels. This last figure is based on the total acreage planted. The loss from late blight on the acreage that survived the drowning and freezing was 50% or more. An estimated 0.5% late blight tuber rot, followed by bacterial soft rot, (Bacillus sp.), occurred.

Early blight, Alternaria solani, was seen in abundance in some fields. Losses from early blight this year were largely prevented by late blight. The Homestead growers plan to plant the potatoes about November 1 so the crop will be "made" by February 1 to 7 when early blight destroys the vines. The season prevented that this year but late blight killed the vines.

Other diseases seen included traces of scab (Actinomyces scabies), Rhizoctonia, black leg (Bacillus phytophthorus) [Erwinia phytophthora], and bacterial ring rot (Corynebacterium sepedonicum). This last disease was pointed out by Mr. J. W. Weston of the Tropical Agriculture Cooperative Association.

Squash. Of the 16 acres observed near Homestead, 10 acres had a 0.5% loss from Sclerotinia sclerotiorum. Two acres had about 3% mosaic. Nearby a trace of Sclerotinia sclerotiorum occurred in collards.

Tomato. About 1300 acres in the Homestead area were sampled. The total acreage in this area is about 14,000 this year. This is about 5,000 acres more than normally is grown.

Alternaria solani, early blight, was widespread. Numerous lesions on the stems, as well as leaf defoliation, will result in considerable losses. It was found on the fruit in small amounts.

Phytophthora infestans, late blight, occurred in epiphytotic amounts several weeks earlier and, although clearing up at the time of the survey, abundant evidence of it still was to be seen. Growers' reports indicated about 40% loss on the first picking of 650 acres in the north glades. Losses up to 80% occurred. A few scattered potatoes were present in this area. The disease was present in the east glades, near blighted potatoes. The evidence would indicate that considerable losses occurred in the early pickings of at least several thousand acres of tomatoes.

Sclerotinia sclerotiorum, stem and fruit rot, is widespread on tomatoes in the area east of Homestead. It was seen killing whole plants.

Traces of Phoma rot [Phoma destructiva] occurred and a trace to about 3% mosaic [virus] was seen on 240 acres.

In the Dania area serious losses from mosaic are occurring. My earlier estimate (January 24-29 report) of 15 to 20% loss on nearly 300 acres surveyed appears to be conservative. No mosaic was seen on the remaining seedlings, 12-15 inches tall, in 6 old seed beds located at the edges of the field.

This survey was made in the Homestead area for the week of February 14. During February 21-23 the Dania-Pompano area was re-checked. The writer accompanied Dr. W. D. Moore on February 23. -- R. A. Hyre, Emergency Plant Disease Prevention Project.

WEST COAST OF SOUTHERN FLORIDA: Bradenton Area -- Most of the Tomato fields seen during the week ending March 4 were recently planted. The most serious disease, found in every field examined, was early blight (Alternaria solani). One large seedbed was seen that was 100% infected with Alternaria. One heavily fruiting late field of 2 acres was examined. The plants were being rapidly killed by early blight and by mosaic virus. In fields of young tomato plants, little or no leaf spotting was seen; the blight lesions were usually confined to the stem, at or near the ground line.

During the week ending March 11 early blight continued to be serious. No clean seedbeds were seen. Most of the seedbeds examined were almost wholly destroyed by this disease. One 4-acre field was seen that was being plowed up and replanted because the first planting was badly cankered. Many growers plant seed in field rows, thinning to commercial stands later, to avoid the inevitable seedbed losses. Such fields show the typical stem cankers also, but are usually not so badly infected in early season as transplanted fields.

Late blight (Phytophthora infestans), early blight (Alternaria solani), canker (Rhizoctonia solani), mosaic, leaf roll, and other virus diseases were seen in the Potato fields examined during the week ending March 4. One field of 8 acres nearly ready to dig showed the following losses from disease: late blight 50%; early blight 10%; Rhizoctonia 5%; virus diseases 5%; -- a total of 70% loss from disease, and with favorable weather for spread of late blight, this loss could be increased.

Two fields of heavily fruiting Eggplant were examined during the earlier week. Serious losses were being suffered in both fields from fruit and stem lesions due to Phomopsis vexans.

Of 10 Squash fields examined during the week ending March 4, only one was found diseased. This 3-acre field was almost a total loss, however, from an attack of powdery mildew (Erysiphe cichoracearum).

Powdery mildew on squash, and on peas [Erysiphe polygoni], and Cercospora leaf spot on beets [C. beticola] were found serious on smaller acreages during the week ending March 11.

Ft. Myers Area -- (Week ending March 11). Powdery mildew was seen on 3 fields of Squash. Infection in one field was light, moderately bad in another, and the third field was a total loss from this disease, although a few squash might be harvested.

One field of Tomatoes in heavy bloom stage was inspected that showed 30% of mosaic. Alternaria was also prevalent.

One field of Peppers examined was nearly defoliated by Cercospora leaf spot (Cercospora capsici).

Five fields of Eggplants were examined. Phomopsis was present but seriously damaging. A disease tentatively diagnosed as late blight (Phytophthora) was also present in 2 fields.

A non-parasitic malady is causing eggplant growers in the Ft. Myers area very large losses. This is a longitudinal split or crack in the fruit surface. The cracks cork over and do no further damage, but growers discard such fruits, as they cannot be marketed. -- C. M. Slagg, Emergency Plant Disease Prevention Project.

MISSISSIPPI: During normal times, winter vegetables apparently are not grown on a large scale in southeastern Mississippi. It was thought that perhaps, during the present emergency, farmers in this area might plant winter vegetables in considerable amounts. During the period February 21 to 26, a trip was made through Pearl River, Stone, George, Jackson, Harrison, and Hancock Counties. Very few even fairly large truck farms were found, in more or less isolated areas, in the section of the State covered during this trip. Cabbage and turnips were the principal vegetables, although one farm of about 20 acres, at Caesar in Hancock County, was also growing spinach, radishes, and mustard. The only diseases noted were traces of downy mildew (Peronospora parasitica) and and Alternaria leaf spot (Alternaria brassicae) [? A. circinans, black leaf spot (PDR 27(16): 317, footnote, Sept. 1, 1943)] on Cabbage; and a considerable amount of white leaf spot (Cercosporella albo-maculans) on Turnips wherever they were seen.

During the week from March 6 to 11, white leaf spot was found to be severe on Turnip plants in the vicinity of Poplarville in Pearl River County; watery soft rot (Sclerotinia sclerotiorum) was beginning to appear on Lettuce in a small planting on the Experiment Station at Poplarville; and a considerable amount of leaf spotting (Alternaria sp.) was observed on Marglobe Tomato seedlings 2 to 5 inches high in one coldframe at Poplarville. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

LOUISIANA: Watery soft rot (Sclerotinia sclerotiorum) was prevalent on Cabbage around Opelousas (St. Landry Parish), Ville Platte (Evangeline Parish), Alexandria (Rapides Parish), and Bunkie (Avoyelles Parish). In extensive plantings near Bunkie the loss was estimated to be 25% or more. The weather during the past 2 weeks has been ideal for the development of this disease. Traces of black rot (Bacterium campestre) [Xanthomonas campestris] and downy mildew (Peronospora parasitica) were also noted in these areas (February 15-19).

In southeastern Louisiana, a trace of black rot, increasing amounts of watery soft rot, and traces of Alternaria leaf spot and of downy mildew were noted on cabbage (February 21-26); and severe damage from watery soft was noted in small fields near Ponchatoula (Tangipohoa Parish) (February 28 - March 4).

A considerable amount of watery soft rot was found on Escarole in St. Bernard Parish in southeastern Louisiana (February 21 -26).

Pink root (Phoma terrestris) was found on Shallots in St. Bernard and Plaquemines Parishes but was not serious (February 21-26). A condition previously mentioned (see preceding issue) as occurring in shallots in poorly drained soil was found to be rather common in large fields near Houma (Terrebonne Parish). These diseased plants were invariably affected by pink root, and on the false stems were found a species of Colletotrichum, and a Botrytis (February 28 - March 4).

On Spinach in St. Bernard Parish, downy mildew (Peronospora effusa) is beginning to show up in notable amounts, particularly on older plants. This disease was found only in this parish (February 21-26).

A small amount of damping-off was seen on Sweet Pepper and Eggplant in

coldframes. Reports of farmers in the trucking area below New Orleans indicate that peppers have suffered considerable damage from this disease. Most farmers are not familiar with the seed and soil treatments that aid in checking damping-off (February 21 - 26). -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

LOWER RIO GRANDE VALLEY OF TEXAS: Bean. The spring crop is beginning to mature in the southeastern part of the Valley and the following diseases have been observed. Stem and root rot (Rhizoctonia solani) was attacking young plants but was not causing more than 1% damage. Southern blight (Sclerotium rolfsii) was found on some volunteer plants in one field. Bacterial leaf blight (Bacterium phaseoli) [Xanthomonas] was found in trace amounts in one field. A leaf spot was also found on a few leaves in which Alternaria was present, probably saprophytically.

Carrot. While leaf blight (Macrosporium [Alternaria] carotae) ranged in amounts from slight to heavy in mature fields in the Valley, the heaviest infections appeared to be in the western end around Mission. The loss for the entire Valley is estimated to be about 5%. Aster yellows (virus) is also more abundant in the western end of the Valley although here the amount does not reach more than 2%. Many weeds, particularly Lactuca scariola, are infected with this virus, some very heavily. The insect vectors are difficult to find. Crown rot (Sclerotinia sclerotiorum) was found in one field near Weslaco attacking mature plants. Although damage in the field was slight, rather high losses may be expected in storage.

Cruciferous Crops. Black spot (Alternaria brassicae) [A. circinans;PDR 27 (16): 317] has been increasing on Cabbage during the past month, particularly on mature heads in fields that were not harvested because of the low market. Some fields in the Los Fresnos area were so heavily infected that the crop was almost a total loss. It is thought that the disease in such fields was due to the use of contaminated seed.

On Turnips, leaf spot (Alternaria sp.) is present in most fields, causing foliage yellowing in some cases. Drop (Sclerotinia sclerotiorum) was present also in one field north of Weslaco.

Chard. Slight leaf spot (Cercospora beticola) is present in the plots at the Experiment Station. Blighting of the petioles and leaves (cause unknown) with discolored light brown water-soaked tissues bearing large jet black lesions is rather common also in the same plots.

Dandelion (Cichorium cataloma). Crown rot (Sclerotinia sclerotiorum) was found in one field near La Villa.

Dill. Aster yellows (virus) was causing 10% loss in one field west of Mission, Hidalgo County. George E. Altstatt reported a trace of aster yellows observed in a small acreage in Hidalgo County February 1.

Lettuce. Downy mildew (Bremia lactucae) was found in one field near Santa Maria, causing extensive necrosis. This disease does not appear to have been reported previously in this State. A leaf spot (Cercospora sp.) was also found on a few old leaves in the same field. Most of the fields show considerable drop (Sclerotinia sclerotiorum).

Several fields of Cos lettuce (Lactuca romana) are located in the Elsa region. Drop is gradually increasing in the older plants and the loss was estimated at 1 to 2%. A small leaf spot was also found in which a Cercospora was sporulating.

Peas. Powdery mildew (Erysiphe polygoni) is severe on some fields near Brownsville, attacking both leaves and pods.

Potato. Late blight (Phytophthora infestans) was found on February 7 and 8 on 2 plants in the vicinity of Barreda. By February 24 it was present in 11 additional fields in the same area. Although most of the fields have been dusted the disease has spread considerably. Blight is also present in abundance in the fields around Southmost. Whether or not the disease will reach epiphytotic proportions will be determined by the frequency of dusting and favorable weather conditions.

In most fields stem rot (Rhizoctonia) can be found causing stem lesions and yellow, often wilted, foliage. A trace of black leg (Bacillus carotovorus) [Erwinia phytophthora] is present in most fields. Early blight (Alternaria solani) is just beginning in the older fields around Barreda.

Spinach. On February 3, white rust (Albugo occidentalis (Wilson) Sacc. & Trav.) was found in abundance in several large commercial fields near Elsa. Because white rust has been present only in trace amounts since it was first reported in February 1941, a survey was made of its distribution. In 10 fields examined the older leaves of practically every plant were heavily infected. One young field had many infected plants, some with every leaf infected. This field will probably be a total loss. The infected fields are mainly in the vicinity of Elsa but fields have also been found near Weslaco and Harlingen. The fact that one of these fields a month ago was free from the disease, and also the absence of white rust in fields near Progresso, San Benito, and Brownsville, indicates that it is spreading rapidly in a southeasterly direction.

Tomato. On February 15, late blight was found on a few small tomato seedlings in a field north of Weslaco. On February 25 near La Sara a field in the flowering stage was found rather heavily infected. A small amount was also found in a field north of Elsa. A trace of early blight was found in several fields. -- Stuart M. Pady, Emergency Plant Disease Prevention Project. Report for February.

TEXAS WINTER GARDEN REGION: Beet (180 acres surveyed). Leaf spot (Cercospora beticola) was generally distributed over most of the Beet plantings surveyed. Slight defoliation and yellowing of the leaves could be attributed to this fungus in plantings near Laredo (Webb County), Carrizo Springs (Dimmit County), and San Antonio (Bexar County). Very little loss resulted from these infections.

Carrot. (1345 acres surveyed). Aster yellows (virus) remained the most prevalent and widespread disease of carrots in the Winter Garden region. Most of the plantings surveyed, during this period, were young (1 1/2 to 3 months). This accounts in part for the lower average infection as compared with previously reported infections. An 85% infection was observed in a 2-acre planting east of Crystal City (Zavala County); nearly all of the plants in this planting infected with the virus had produced premature seed stalks.

In most of the plantings in this region there has been a reduction in the number of leaf hoppers.

Amounts of infection in the various counties are as follows:

County	Acres Surveyed	Average Infection %	Range of Infection %
Dimmit	928	28	1-46
Frio	125	18	1-27
Maverick	5	12	3-21
Uvalde	45	65	40-77
Webb	176	14	3-28
Zavala	566	26	1-85

Leaf blight (Cercospora apii carotae) [C. carotae] was observed in several plantings, most conspicuously near Crystal City and Uvalde (Uvalde County). The loss was negligible in each instance.

Leaf blight (Macrosporium [Alternaria] carotae] was observed in most of the older plantings surveyed. In 2 instances considerable defoliation and yellowing of the foliage could be attributed to it. A loss of nearly 25% of the foliage was observed in a 50-acre planting near Brundage (Dimmit County).

Infestations of the rootknot nematode (Heterodera marioni) were observed in 2 plantings near Laredo and in a single planting near Catarina (Dimmit County). A loss of at least 10% of the plants in a 20-acre planting near Laredo was apparent.

Cruciferous Plants. (1140 acres surveyed). Broccoli, Cabbage, and Cauliflower plantings were observed in the Winter Garden region. Three diseases were observed in several of the plantings surveyed: leaf spot (Alternaria brassicae) [A. circinans], downy mildew (Peronospora parasitica), and drop or watery soft rot (Sclerotinia sclerotiorum).

In a late planting of broccoli near Laredo considerable loss resulted from Alternaria infection which rendered the edible portion unmarketable. A similar loss resulted in a late planting of cauliflower near Eagle Pass (Maverick County).

A loss of nearly 100% in a 35-acre planting of cabbage 20 miles northwest of Laredo resulted from Alternaria leaf spot. The innermost leaves of the flowering stalks of several plants examined were infected with this fungus.

Downy mildew infections were present in all of the plantings of these 3 crops surveyed. In no instance was the infection causing very much damage.

Drop or watery soft rot was prevalent and widespread in cabbage plantings in this area. The amount of loss fluctuated from 4 to 25%. Considerable loss resulted in Bexar, Dimmit, Maverick, Webb, and Zavala Counties. The most severely infected cabbage planting was observed northeast of Crystal City where a loss of nearly 25% was noticeable.

Powdery mildew (Erysiphe polygoni) was generally distributed over all of the Turnip plantings surveyed. An infection of nearly 100% was observed near Laredo, Uvalde, and Eagle Pass. Leaf spot (Alternaria brassicae) caused very little loss in turnip plantings, although in 2 instances slight defoliation and yellowings of the leaves resulted from Alternaria infections.

Endive. (115 acres surveyed). Drop or watery soft rot (Sclerotinia sclerotiorum) was the most serious disease of endive in this region. A loss of 17% was observed in a 25-acre planting near Winter Haven (Dimmit County).

Aster yellows (virus) was observed in all of the plantings surveyed. The infection fluctuated with the age of the planting. Symptoms of this virus disease in endive are most difficult to ascertain on young plants; however, the visible infection fluctuated from a trace to 5% in young plantings, whereas the most severely infected mature planting had an infection of 14%.

Escarole. (5 acres surveyed). Not more than 1% of aster yellows was observed in this planting near Carrizo Springs, at the time of this survey.

Lettuce. (227 acres surveyed). Aster yellows (virus) fluctuated in amount with the age of the lettuce. Considerable loss was sustained in mature lettuce, in most instances, whereas, very little loss was observed in young lettuce. In the most severely infected mature lettuce, near Laredo, a loss of 38% was observed. The loss in young lettuce (1 1/2 to 3 months) fluctuated from 6 to 10%.

Drop or watery soft rot (Sclerotinia sclerotiorum) was observed in all of the mature plantings surveyed. A loss of 17% was observed in a 25-acre planting in Dimmit County. The loss in all of the plantings surveyed fluctuated from a trace to 17%.

Bacterial soft rot (Erwinia carotovora) was observed in 2 mature plantings with nearly 15% loss near Laredo and Winter Haven.

Onion. (785 acres surveyed). Tip blight (undetermined) was the most severe condition observed on onions in this area. This condition was prevalent and widespread in most of the onion growing sections of this region. This condition results in the destruction of the tissue ranging from 4 to 8 inches from the tip of the injured plant. Saprophytic organisms were observed growing on the killed tips.

Pre-emergence damping off and rotting of the seeds caused considerable loss in various plantings surveyed. A loss of 15% in a 40-acre planting near Crystal City was observed.

Pink root (Phoma terrestris) was observed in most of the plantings surveyed, with little loss however, in most instances. Most of the damage was observed in "seed beds". The infections fluctuated from a trace to over 50% in various "seed beds" in Webb, Zavala, and Dimmit Counties. Nearly 15% was observed in a "matured onion planting" southeast of Carrizo Springs.

Southern blight (Sclerotium rolfsii) was observed at Winter Haven and Laredo. The loss was negligible in each instance.

Yellowing (undetermined). Yellow onion plants were observed in nearly all of the plantings surveyed. The number of injured plants fluctuated from a trace to nearly 10% in a planting near Laredo. This condition suggests a virus disease; however, the symptoms are not very similar to those of the yellow dwarf virus disease of onions.

Parsnip. (75 acres surveyed). Plants were collected from various plantings near San Antonio having symptoms characteristic of aster yellows. The amount of infection varied from a trace to nearly 5% in the most severely infected plantings.

An undetermined leaf spot was generally distributed in the plantings near San Antonio. The loss was negligible in each instance.

Spinach. (1475 acres surveyed). White rust (Albugo occidentalis) was the most prevalent and widespread disease of spinach observed during this survey period. Considerable loss resulted in the various spinach growing sections. A 50-acre planting northeast of Crystal City was a total loss due to this disease. Several plantings in Dimmit, Maverick, Webb, and Zavala Counties had infections varying from a trace to over 50%.

"Pin head rust" or leaf spot (Heterosporium variabile), during recent weeks, has increased in virulence and has caused considerable loss to the spinach industry. Infections were prevalent and, although usually localized in a given area, caused severe losses. In 2 or 3 instances the disease was so severe that small acreages of spinach were plowed under.

Downy mildew (Peronospora effusa) affected plants were observed in nearly all of the plantings surveyed. Nearly 25% was observed near El Indio (Maverick County). The growth of secondary organisms in downy mildew spots caused considerable damage in 2 large plantings near Crystal City.

Aster yellows (virus) was more prevalent than any other virus disease of spinach. Affected spinach plants were observed in nearly every planting surveyed; however, the amount of infection varied from a trace to 15%. The most severe infections were observed near Eagle Pass and Laredo.

In most plantings an occasional plant was observed affected with the curly top virus; in no instance more than 1%.

Plants affected by mosaic (virus) were observed in 2 plantings in this area. In a flat leaf spinach planting near La Pryor (Zavala County) a localized infection of nearly 2% was apparent. -- Howard W. Larsh, Emergency Plant Disease Prevention Project. February 7 - 28.

COASTAL BEND AREA OF TEXAS: Generally, Cabbage is in good condition and the leaf spot caused by Alternaria brassicae [? A. circinans] is doing very little damage. Cabbage in low spots shows more leaf spot, and some discoloration due to excess water. One block was observed where the owner had some irrigations in addition to abundant natural rainfall, resulting in heavy loss.

The acreage in Carrots in this area is not extensive. Scattered plants have been found with the symptoms of aster yellows (virus).

In a 2-acre field of Dill an ash-colored stem and leaf blight was found, causing an estimated 2% damage. Specimens sent to Stillwater, Oklahoma for examination, confirmed the identification of the parasite as Cercosporella anethi Sacc.

Onions examined in the vicinity of Sodville, San Patricio County, on February 18 showed slight damage by "blight" of undetermined cause (see above, page 199). While the damage was slight at that time, there was every possibility that the trouble would continue to increase and spread. The fields in which blight was found had been planted to onions last season, and were one of the most severely affected areas in 1943.

Brighter days during the last week of February have interrupted to some extent the advance of blight in this area. Some of the purple color is

showing in some lesions, indicating a possible tie-up with purple blotch (Macrosporium [Alternaria] porri). It is believed that the blight will remain somewhat static unless rains and fogs become prevalent again. Damage has been slight in young onions, but in a few fields of earlier onions the loss of leaf is estimated to be 15 to 20%.

The Spinach white rust [Albugo occidentalis] and blue mold [downy mildew, Peronospora effusa] picture has not changed much since the last report. Both diseases can be found in any field, the white rust being the more serious at the present time.

Much of the mature spinach has been plowed up, owing to the diseases and to labor conditions. Several farmers reported that the laborers fail to trim out the infected leaves, making for poor quality and lower prices.

Late plantings of spinach show white rust and blue mold generally, but it is expected that dry weather will retard the development of these diseases as the plants grow larger. -- George E. Altstatt, Emergency Plant Disease Prevention Project. February 15 - March 1.

EASTERN TEXAS: A trip was made February 21 through 25 to east Texas to examine plant beds at farms producing young tomato, pepper, eggplant, and cabbage plants for sale. The greatest concentration of such establishments occurs in the eastern part of Cherokee County at the communities of New Summerfield, Ponta, Reklaw, and Gallatin. A single firm which conducts very large operations was visited at Omaha, Morris County. Isolated small establishments were visited in other places. The following diseases were recorded:

A 2-acre field of Cabbage from which most heads had been harvested was examined at Ace, Polk County. Black leaf spot (Alternaria brassicae) [A. circinans] was abundant there and a trace of downy mildew (Peronospora parasitica) was observed. In an estimated total of 5 acres of seedling beds examined at several places in eastern Cherokee County the commonest disease was wire stem and root rot (Rhizoctonia solani) which occurred on from 5 to 75% of the plants in different beds. Most plants showed the Corticium stage [Pellicularia filamentosa, PDR 27(21): 583, footnote. Oct. 22, 1943] developing on the shanks above the ground line. Downy mildew was present in all beds but of negligible importance in most. In a single establishment at Gallatin 75% of the plants showed downy mildew. Black leaf spot occurred as a trace in all beds except at the aforementioned farm at Gallatin, in which the disease abounded. At this same establishment most plants that were pulled up showed rootknot (Heterodera marioni). The extensive cabbage seedling beds at Omaha, Morris County, were in good condition except for a trace of downy mildew.

Tomatoes were seen only as very young seedlings in hot beds. Most were in excellent condition, but an occasional bed was seen at New Summerfield in which up to 50% of the plants had been lost from damping-off (probably Rhizoctonia solani).

Onions in a planting at Ace had withered, yellowed leaf tips, which probably resulted from weather conditions. -- G. M. Watkins, Emergency Plant Disease Prevention Project.

WESTERN WASHINGTON: Mosaic (virus) was very prevalent and severe in the Cabbage seed crop in Skagit County. In Cowlitz County the crop from 15,000 plants of Ballhead cabbage was lost because of "fly specks" due to the necrotic type of virus. Earlier attempts to select healthy plants for harvest proved futile because the symptoms were not readily detected by workers and were reported to have become more severe after storage. The grower reported that no difficulty of this type was experienced with the Copenhagen Market variety grown adjacent to the Ballhead. A small planting of cabbage for seed was observed in the southern part of Cowlitz County. Plants showing mottle or vein banding type of virus symptoms were scattered through the plot. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project. February 9 - 22.

WESTERN OREGON: Multnomah and Clackamas Counties were visited February 22 and 23.

Cauliflower -- Ring spot (Mycosphaerella brassicicola). Lesions were evident on nearly every plant in a plot near Portland on highway 30. This was the most severe attack noted in Multnomah County. Part of the crop had been harvested; no data was available regarding variety or yield. This disease was not noted in large plantings near Lake Grove, Clackamas County.

Mosaic (virus). One of the most severe infections observed of the vein-banding and mottle type of virus also occurred at the locality near Portland. Approximately 10% of the plants showed stunting of various degrees apparently due to the virus infection. In Clackamas County near Lake Grove infections of the vein-banding type of virus were scattered through large plantings. Only a trace of the plants appeared to have been stunted in growth. These plantings were of a late variety, the heads of which had not developed.

Leaf blister (undetermined). As one walked through the plantings of cauliflower near Lake Grove, certain leaves appeared as if covered with aphids. This appearance was due to small blisters on the underside of the leaves. The origin is not known, although the fact that it was limited to the larger inner leaves suggests that perhaps low temperature at some time during the development of the plant may have been the cause. No deleterious effect on growth was apparent at this time.

Cabbage -- Mosaic. Vein-banding and mottle with enations on the larger veins were the symptoms apparent on older leaves. Where the crop had been harvested, good yields were reported and evidence of material reduction in yield was not apparent. No severe infections were noted but affected plants were scattered in fields throughout the area.

Black fleck (undetermined). At Troutdale, large very black flecks were observed in the larger lateral and midveins of the leaves. These flecks were deep in the vein tissue in some cases but occurred more commonly at the convex surface of the vein. Only traces were noted. The cause has not been determined further than the observation that no organism was associated with the lesions. It is suspected to be of virus origin since the symptoms were not apparent in the main stem or core of the plant as described for boron deficiency.

Ring spot and Alternaria spot. Traces of these diseases were noted at scattered points throughout the area. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

CENTRAL CALIFORNIA: Monterey County -- Peas in the vicinity of Greenfield and King City were comparatively free from disease during the week ending February 19. Only a small amount of infection by Ascochyta could be found.

Colma Area, San Mateo County -- During the week ending February 26, a trip was made to the vegetable-growing area near Colma in San Mateo County. The harvesting of the winter crop of crucifers in this area was almost over and the young plantings have already been made. The older plantings of Cabbage showed light to moderate infection by black ring (virus), ring spot (Mycosphaerella brassicicola), and light infection of downy mildew (Peronospora parasitica). Such old plantings no doubt furnish abundant inoculum for the infection of the younger plantings nearby. However, these young plantings appear to be free from disease at this time. One small field of Cauliflower showed a very severe infection of ring spot, and a small amount of root rot (Phytophthora megasperma) was also present in the same field.

Other vegetable diseases observed in the area were downy mildew (Peronospora schachtii) on garden beet; rust (Uromyces betae) and leaf spot (Cercospora beticola) on garden beet and chard; rust (Puccinia hieracii) and aster yellows (virus), on endive; late blight (Phytophthora infestans) on volunteer potato plants; and late blight (Septoria apii) on celeryroot.

On the whole the plant disease situation in this area has changed but little since last observed. Since the vegetable-growing season in this area is now at a low period, the losses due to these diseases are very slight. However, the important fact is that new crops are now being set out in the field, and that these old plants may serve as important carryover hosts for the diseases. -- Horace L. Barnett and E. W. Bodine, Emergency Plant Disease Prevention Project.

SOUTHERN CALIFORNIA: Artichoke -- Two plantings of artichoke observed near Lompoc, Santa Barbara County, were affected by leaf spot (Ramularia cynarae); in one case 50% of the foliage and some of the flower stalks were damaged. In the same planting 5% of the plants were dying as a result of root rot (Phytophthora megasperma), which was associated with the very wet condition of the field (January 27, 28).

Bean -- Two young plantings of snap beans near Oceanside in San Diego County were free from disease. A failure of the first leaves to open properly seemed to be associated with insect feeding on these parts and on the cotyledons before emergence. (February 9, 10, 11).

Beets and Chard -- In Imperial County, visited with E. W. Bodine, January 18-20, no disease was found in one planting of table Beets that was being harvested. In Ventura County, visited with Mr. Holland, Assistant Farm Advisor, January 25 and 26, 2 plantings in the vicinity of Ventura and 1 near Oxnard were examined; in one the plants were heavily infected with rust (Uromyces betae). Rust was severe in one planting in the Mission Valley district, the only one of 5 plantings examined in San Diego County (February 9, 10, 11) to be diseased. One field of table beets in the Santa Barbara--San Luis Obispo County area (January 27, 28) was lightly attacked by leaf spot (Cercospora beticola). Three plantings in Los Angeles County (February 1, 3) were free from disease except for

traces of leaf spot.

A field of Chard in Los Angeles County was 50% affected by mosaic (virus).

Carrot -- Two plantings of carrots, being harvested, in Imperial County (January 18, 19, 20) were free from disease as were also all plantings in this county visited a month later (February 15-17).

One field in Ventura County (January 25, 26) was severely damaged above ground by leaf blight (Cercospora carotae). The roots were being dug and marketed without the tops so that little loss will result from the disease.

In Los Angeles County (February 1, 3), carrots in the vicinity of El Monte were found to be affected generally with Cercospora leaf blight. One field in this region was 100% affected by a root rot (? Phytophthora megasperma). The lower third to half of the roots was rotted with a moist rot, and the outer layers of the decayed tissues were black. When pulled the rotted portion of the roots remained in the ground. This field was water-logged.

Cercospora blight was abundant in one field in San Diego County (February 9-11).

Celery -- A trace of pink rot (Sclerotinia sclerotiorum) occurred in a celery planting near Lompoc in Santa Barbara County (January 27,28), and late blight (Septoria apii) was abundant in all 3 fields visited in this region. Late blight was causing severe damage in 3 plantings examined in Los Angeles County (February 1, 3). In San Diego County (February 9-11) late blight was abundant in 2 plantings observed and appeared only on the lower foliage in a third, while pink rot was present in traces up to 2% of the plants affected.

Cruciferous Crops -- On the basis of spore measurements from material collected recently, the fungus called Alternaria brassicae[1] in an earlier report (PDR Jan. 15, p. 54) should be termed Alternaria herculea[2] instead.

Broccoli in 5 plantings in the Santa Barbara-San Luis Obispo County area (January 27, 28) showed traces of mosaic (virus) and leaf spot (Alternaria herculea)[2] and one planting, near Lompoc, was generally affected by downy mildew (Peronospora parasitica). Downy mildew was causing severe defoliation in 2 fields in Los Angeles County (February 1, 3). Traces were observed on the older leaves in 2 plantings in San Diego County (February 9-11).

A single planting of Brussels sprouts near Pismo Beach in San Luis Obispo County was affected with mosaic (virus) in traces, and also showed a small amount of gray mold rot (Botrytis cinerea) in the terminal buds.

Cabbage plantings in Ventura County showed a few leaf spots (Alternaria herculea);[2] this was also the only disease observed in 2 plantings in the Santa Barbara-San Luis Obispo County area, on old leaves. Mosaic (virus) was commonly present in 5 plantings examined in Los Angeles County, infection ranging from 2 to 10%. Downy mildew also occurred in these plantings, occurring in traces to abundant amounts on old leaves and on the outer leaves of the heads. From a trace to 2.5% of the mosaic, and traces of downy mildew on the older leaves, were observed in 6 fields in San Diego County. Two plantings in Imperial County that were entirely disease-free when examined in January, showed a considerable amount of downy mildew on the older leaves and on the outer leaves a month later.

---

1 [A. circinans, see PDR 27(16): 317 footnote]

2 [A. brassicae, see PDR, l.c.]

Mosaic was abundant in 3 Cauliflower plantings visited in Ventura County. Six plantings in the Santa Barbara-San Luis Obispo area showed from a trace to 2% of mosaic and an occasional leaf spot caused by A. herculea.[3] Downy mildew was abundant in an abandoned planting near Lompoc, Santa Barbara County, where it was becoming systemic in the curds. In Los Angeles County, cauliflower fields examined showed from 2 to 100% of the plants affected with mosaic, and downy mildew was general on the older leaves in all the plantings and in 2 fields affected all the foliage of 75 and 100% of the plants. In 4 plantings in a very wet area near El Monte in this county, 10% of the plants were dying from root rot caused by Phytophthora megasperma. In 3 plantings in San Diego County mosaic infection ranged from a trace to 30%; wild mustard nearby was severely affected with the disease. Downy mildew was abundant and appearing on the younger foliage in one planting in San Diego County.

Turnips and Mustard in Ventura and Los Angeles Counties and Radishes in San Diego County were free from diseases.

Lettuce -- Lettuce examined in Imperial County in January showed traces of mosaic (virus) and general yellowing associated with low temperatures. In Ventura County bacterial soft rot (Erwinia carotovora) appeared on the outer leaves following injury from drying winds and frost, and a small amount of drop (Sclerotinia sclerotiorum) was seen. Downy mildew (Bremia lactucae) was abundant on the outer leaves in lettuce plantings in the Palm City and Mission Valley districts of San Diego County, and mosaic occurred in traces in 2 plantings. Lettuce observed in Los Angeles County was free from diseases.

Peas -- The section on root rots of the earlier report of pea diseases observed in the Imperial and Coachella Valleys January 12, 13, and 14, (PDR 28(2):55, Jan. 15, 1944), which was based only on field observations, should be amended as follows:

Dr. William C. Synder of the University of California has made careful laboratory examination of the pea material collected in January and states "No Fusarium wilt (Fusarium oxysporum f. pisi r.1) was found. No Ascochyta blight (Ascochyta spp.) was found on either above- or below-ground parts of plants. The predominant disease was Fusarium root rot (F. solani f. pisi). Evidence of Rhizoctonia and Pythium root rots was present."

In Imperial County, January 18-20, together with E. W. Bodine, 9 plantings of peas were visited in the Niland district. Root rot (Fusarium solani f. pisi) was found to be more severe in 2 fields not visited previously. In the worst-affected field, 50% of the plants were killed and the remainder were severely damaged below the ground. A light sprinkling of leaf spot (non-parasitic) had appeared on the lowermost leaves of some of the plants.

A month later (February 15-18), 7 plantings were visited in the Niland district. Root rot (Fusarium solani f. pisi) had increased since the last visit to this area. The number of plants affected ranged from a trace to 75%. Dr. Snyder reports near-wilt in 2 of one lot of plants sent to him from this area. The non-parasitic leaf spot had appeared on the upper foliage of some of the plants. A species of Cladosporium, probably a saprophyte, was found fruiting on old dead leaves and pods near the ground.

---

[3] See preceding page footnote[2]

In the Santa Barbara-San Luis Obispo County area (January 27, 28) only one planting of peas was found, on the mesa north of Guadalupe; it showed only an occasional leaf spot (Ascochyta sp.).

Three plantings observed in the Palos Verdes district of Los Angeles County contained good stands, with about 1% of the seedlings retarded and showing black root lesions (Ascochyta spp.).

Four plantings near Oceanside in San Diego County were free from disease.

Pepper -- In one planting observed in San Diego County, from 3 to 5% of the plants were destroyed by wilt (Verticillium albo-atrum).

Spinach -- Three plantings were visited in the Mission Valley district of San Diego County. Two showed downy mildew (Peronospora effusa) on the lowest leaves, and one showed a trace of mosaic (virus).

Summer Squash -- One planting of summer squash near Oceanside in San Diego County was almost completely defoliated by powdery mildew (Erysiphe cichoracearum). A nearby, younger planting had been dusted with sulfur and showed no powdery mildew.

Tomato -- An old abandoned tomato planting observed near Oceanside in San Diego County contained plants affected with curly top (virus) and mosaic (virus). Most of the foliage was heavily spotted with Septoria blight (Septoria lycopersici). According to Dr. J. T. Middleton and Dr. Max Gardner, Septoria lycopersici has not previously been reported from California.

Miscellaneous -- Onions examined in Imperial County were free from disease both in January and February. Two plantings of Endive in the Santa Barbara-San Luis Obispo County area were free from disease, although the stands were poor. -- Seth Barton Locke, Emergency Plant Disease Prevention Project.

NEMATODE SURVEY IN FLORIDA

A. L. Taylor

During the period February 14 to 22, a survey of vegetable crops in the vicinity of Homestead was conducted.

In this section, 2 principal soil types are used. One is a marl underlain by limestone rock and ranging in depth from a few inches to several feet. This soil is low and inclined to be wet, much of it being flooded during the rainy season. It is used principally for vegetable crops. The other soil type is the flat pine land rock, which is a soft limestone rock with a thin layer of soil on top. It is principally used for citrus and other tree crops, though occasional pockets of deeper soil are also used for vegetables.

The main vegetable crops are snap beans, potatoes, tomatoes, and squash. At this time harvest of all of these was well under way.

Beans on the marl soil were not found to be more than lightly infected by the rootknot nematode, Heterodera marioni, and evidence of damage by this pest was not found or reported by farmers. In soil from around the roots of obviously weak bean plants, large numbers of nematodes of the

species Anguillulina erythrinae or a very closely related form were collected, but it could not be established that this nematode was the primary cause of the damage.

Rootknot on tomatoes varied from a slight trace to 95% severe, with some apparent correlation between the location of the field and the severity of the infection. That is, fields near the edge of the marl area were much more apt to be infected than those farther away from the edge. It seems probable that the water relations of the soil play a large part in the distribution of the nematodes since the edges of the marl are higher and drier than the central portions and less likely to be flooded or water-soaked during the rainy season. This was well illustrated by a 20-acre tomato field near Kendall, the edges of which were dry and the central portion low and wet. On the dry portions of the field, nearly all of the plants were very heavily infected with rootknot, with an abundance of knots on all roots, old and new. But on the low and damp parts of the field, only the oldest roots were infected, while the newer roots were free of knots. It was apparent that the field had been set with infected plants, but the infection had spread to the new roots only on the dry parts of the field.

On a 10-acre field in a similar location, rootknot was found on the plants only on the dry margins of the field.

On a 200-acre farm devoted entirely to tomatoes, only a slight trace of rootknot was found. This farm was on marl soil somewhat lower than the surrounding country and therefore unusually wet, being entirely covered by water during part of the summer. The farmer reported that the same land had been used for tomatoes for several years in succession, but that rootknot was found only when plants grown on the flat woods soil were used.

Similar observations were made on farms at several other points in the area.

In all of the observations made on tomatoes in this area, rootknot was found on considerably less than 5% of the plants examined. Actual damage was confined to the drier portions of the marl and was significant only in a few isolated spots. No severe tomato wilt was observed.

Several farmers reported that tomato plants grown on the flat woods soil were often infected with rootknot. Home gardens in similar locations were also reported to be heavily infected.

Soil samples collected from around tomato roots in several locations contained nematodes of the genera Rhabditis, Dorylaimus, Mononchus, Criconemoides, and Aphelenchoides. Also found in almost every sample examined were numerous specimens of Anguillulina erythrinae.

Most of the squash seen were yellow summer varieties. One 3-acre field near the edge of the marl was spotted with stunted plants, all of which were heavily infected with the rootknot nematode. Loss of productive plants from this cause was about 5%. Another 3-acre field in a similar location had 10% of the plants lightly infected with no apparent damage. No rootknot was found during a fairly thorough examination of a 100-acre squash field on low-lying marl soil. In these observations also, the relation between the location of the soil and rootknot is evident.

Soil from around the roots of squash collected at various locations contained nematodes of the genera Dorylaimus, Acrobeles, Aphelenchoides,

Mononchus, and Diploscapter. Anguillulina erythrinae was again found in large numbers.

On potatoes observed on many occasions on the sorting belt at the packing houses, no rootknot or other nematode damage was found. All of the potatoes examined were grown on marl.

On guava roots collected on the grounds of the Subtropical Experiment Station at Homestead, no rootknot was found. Soil was the flatwoods rock. Washings from the roots contained nematodes of the genera Dorylaimus and Mononchus. Anguillulina erythrinae was also present in most samples.

Aglaonema plants from a nursery bed composed of soil and compost contained numerous meadow nematodes (Pratylenchus pratensis) and were also heavily infected with a Pythium.

Rootknot was reported to be one of the principal limiting factors in the production of papayas and figs in this section.

In summarizing, it might be said that the marl soils in the vicinity of Homestead are apparently free of the rootknot nematode, except for the higher portions near the edge of the marl area. As these portions of the marl are also the driest, there is a strong possibility that water is the principal limiting factor in the distribution of the pest. Where the soil is flooded or watersoaked for any considerable part of the year, rootknot nematodes do not occur naturally and do not thrive when introduced. Because of establishment of air fields, drainage of the Homestead area has been increased in the last few years. If this is continued, an increase of the amount of soil suitable for rootknot can be expected.

In the cultivated flat wood soil, the rootknot nematode is apparently abundant where conditions are favorable otherwise. While it is not an important factor in the growth of citrus, avocados or mangoes, figs and papayas are heavily infected and seriously injured.

Among the other nematodes found, Anguillulina erythrinae seems to be the most important. This species is reported (T. Goodey. Anguillulina multicincta and other species of Anguillulina associated with the roots of plants. Jour. of Helminthology. 18(1):21-38. Mar. 1940) as an endoparasite of various plants.

Recommendations. 1. Experiments should be conducted on the effect of flooding on the survival of the rootknot nematode in marl soil. These studies should attempt to determine the length of time necessary for control of the nematode by flooding and the relative merits of continuous flooding, of alternate flooding and draining, and of watersoaking without actual flooding. The information so gained will be of immediate practical application in favorably situated areas around the edge of the marl area and will be of great interest if the present trend toward increased drainage continues.

2. Methods for the chemical control of rootknot should be tested under the peculiar conditions of this section.

3. Methods of control of rootknot on papayas and on susceptible perennials should be developed.

4. The relationship of Anguillulina erythrinae and other nematodes of similar habit to the crops of this section should be investigated.

During the period February 23 to 29 vegetable crops in the vicinity of Fort Lauderdale and Pompano were examined.

In this region, most of the soil is sandy, but there is also an important marl area and some muck. Generally speaking, the area is well drained by a system of canals, but individual fields vary considerably in this respect. The marl and muck soils and some of the sands are rather wet and are often flooded by heavy rains.

At this time, the principal vegetable crops are snap beans, tomatoes, squash, peppers, and eggplant. Harvest is well under way, though there are many plantings which are not yet mature.

Rootknot infection with a considerable amount of apparent damage was often found on beans in the well drained sandy soil. The following observations were made on fields of this type, damage being reported as an estimate of the percentage of plants too stunted to produce.

Rootknot in Bean Fields in the Fort Lauderdale-Pompano Area.

Number of acres	Rootknot Infection	Remarks
40	General light infection on 6 acres	No estimate of damage made because of prevalence of other diseases
24	25% to 75% heavy on various sections	Average of 25% of plants stunted
7	Trace	No damage
40	5% heavy	Little damage
10	50% heavy	At least half of infected plants too stunted to produce.
6	50% heavy	Same as above
10	20% moderate	5% damage

On sandy land that was poorly drained, only a trace of rootknot was found and no damage from this cause.

Bell peppers in several locations in the sandy soil had no more than a trace of rootknot and no apparent damage.

Eggplant also was not found to be more than lightly infected by rootknot and was never damaged on the sandy soil.

In the few tomato fields on sandy soil examined, rootknot was abundant, but damage from this cause could not be accurately estimated because of the effects of other diseases.

Six acres of mature squash on rather wet sandy soil had only a trace of rootknot and no apparent damage. But 6 acres of young squash on well

drained sandy soil had 75% severe rootknot with most of the affected plants so stunted that they would never produce. Another field of 3 acres was found to have been abandoned because nearly all of the plants were killed or stunted by rootknot.

On the marl soil, numerous tomato fields were examined but no more than a trace of rootknot was found. Farmers in this section reported that they had never seen rootknot except near the margins of the marl area.

No rootknot was found on 2 vegetable farms on muck--one northeast of Miami and the other west of Ft. Lauderdale. In both cases, the soil is low and so poorly drained that it is flooded every summer.

At a nursery in Ft. Lauderdale, heavy rootknot infection was found on tomatoes in a garden and a light infection was found on an adjacent planting of peppers. Papayas and fig trees in the same location were moderately infected, but no rootknot was found on mango or avocado roots.

Mr. Glenn Bates, of Ft. Lauderdale, reports that he has obtained excellent results in the control of rootknot on papayas by the use of Crotalaria as a cover crop.

Generally speaking, in the Ft. Lauderdale-Pompano area, rootknot appears to be an important factor on the higher and drier sandy soils, particularly on beans and squash. Very little rootknot was found on the wet portions of the sandy soils, on marl or on muck. Here again the observations strongly indicate that a considerable degree of control of the rootknot nematode can be obtained by flooding.

Recommendations. 1. The need for more exact knowledge of the relations between the rootknot nematode and flooding is again apparent.

2. Methods for the chemical control of rootknot should be tested under the conditions of this section, particularly row treatments.

3. A rootknot-resistant snap bean would be very valuable in this section if resistance could be combined with other desirable characteristics.

4. The value of Crotalaria as a cover crop to precede and to be interplanted with papayas and figs should be investigated.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

CONDITION OF WAR-APPROVED SEED POTATOES IN OHIO

M. R. Harris

During the past few weeks (prior to March 4) inspections have been made of a number of lots of potatoes in bins which were submitted to the State of Ohio as suitable for war-approved seed potatoes. This work has been done in cooperation with the Horticulture Department, College of Agriculture of Ohio State University.

During the past growing season farmers over the northern section of the State entered fields of potatoes as suitable for examination under the war-approved seed program. The following table gives a summary of data concerning these fields.

Summary of acreages of war-approved seed potatoes in Ohio

Total number of growers entered	53
Total number of acres originally entered	520.25
Total number of acres rejected because of virus and other diseases	89.00
Total number of acres later withdrawn from inspection	71.50
Total number of acres bin inspected	359.75
Total number of acres showing ring rot	138.75
Total number of acres meeting war-approved seed specifications	221.00

After the fields passing field inspection were dug and stored bin inspections for such diseases as scab [Actinomyces scabies] and ring rot [Corynebacterium sepedonicum] were made. No lots were rejected because of scab but several lots were found to be infected with ring rot. The following table summarizes bin inspections.

Summary of bin inspection data on war-approved seed potatoes in Ohio

Acreages and Bushels	Varieties				
	Katahdin	Sebago	Russet Rural	Erie	Totals
Acres originally entered	236.00	68.25	117.00	10.00	431.25
Acres later withdrawn from entry	9.00	24.50	38.00	0.00	71.50
Acres rejected for ring rot	126.50	6.25	6.00	0.00	138.75
Acres certified as suitable for war approved seed	100.50	37.50	73.00	10.00	221.00
Bushels infected with ring rot	18200	675	900	0	19775
Bushels of potatoes suitable for certification as war-approved seed	12035	3900	7910	700	24545

Summary and Conclusions. 1. Katahdin potatoes over the State generally showed much bacterial ring rot during the 1943 season. Of the lots submitted for inspection as war-approved seed more bushels were rejected than accepted.

2. Russett rural potatoes were relatively free of ring rot but more susceptible than other varieties to scab.

3. Sebago potatoes appeared to be fairly susceptible to both scab and ring rot. One lot was injured by late blight. This variety sprouts easily in the bin.

A list of growers who expect to sell seed is to be made available by the Horticulture Department of Ohio State University.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

POTATO DISEASES IN STORAGE AND TRANSIT

TRANSIT ROT IN POTATOES SHIPPED FROM MAINE: After receiving reports of numerous cases of shipping rot developing in Maine potatoes, some time was spent from February 28 to March 4 in the Boston and Charlestown receiving yards inspecting Maine potato shipments. Soft rots have developed within the shipping period of 3 days to a week, and in sacked potatoes as well as in bulk shipments. The kind and size of sack does not appear to have much bearing upon rot development. Soft rot was found in the half-peck paper sacks on the one extreme and in 150-pound burlap sacks on the other extreme. However, not enough samplings were made on size and kind of sack to draw accurate conclusions. Thorough grading and rigid inspection have not been entirely effective in eliminating the transit and post-transit soft rot development. Cars leaving Maine grading 1% and less of defects have arrived in Boston and New York with parts of the car having 50% to 80% soft rot.
Just how much soft rot of this nature has developed is hard to determine. We do know however, that it has been a matter of concern and a source of worry to the shipper, receiver, inspector and others. After carefully examining some cars with soft rot it seems obvious that the incidence of rot reverts back to the predisposition of the potatoes in Maine and to their condition during shipment.

For anyone who has spent, as the writer did, 2 weeks in Maine in January visiting numerous potato houses where slimy soft rot was developing, the present transit rot situation is very reminiscent of, and analagous to, the bin rot condition observed in Maine. In all likelihood the transit rot is a continuation of bin rot, or has developed from bacterial infection of contaminated graders. Whether or not rot develops in transit apparently depends, in some cases at least, upon how the car was conditioned for loading, and upon the heat and air condition of the car enroute. Several cars were seen where slimy rot had gained a start on the tubers in the bin, but there had been no further development since brushing, drying, and loading in Maine. In other cases it seemed that such predisposed tubers had continued to disintegrate in shipment.

Shipping rot seemed to be almost wholly of the slimy rot type (external disintegration). Early stages were accompanied by varying degrees of skin discoloration (browning) and tiny pits of disintegrated tissue. Later stages of the rot constituted one or more pits of varying sizes which in the final stages enveloped the whole tuber. Some tubers almost completely disintegrated looked as though they might have been subjected to previous heating in the bin or even chilling.

Following are some counts made from Aroostook County, Maine potatoes as they were found in Boston and Charlestown, Massachusetts:

Case No. 1. These potatoes were originally shipped from Ft. Fairfield where they had been graded (possibly more than once). They were again graded and bagged in Boston for further shipment. Two days later they were rejected at their new destination and returned to Boston where they were again graded, when this count was made. The count was made of a

100-pound sack selected at random. (There were 90 tubers in the 100-pound sack of Katahdins as these were of the 3 inch medium grade).

Apparently sound tubers	67.78%
Slimy pits from the size of a radish seed to the size of a pea seed	14.44%
Slimy pits from the size of a pea seed to some still firm tissue	11.11%
Disintegrated or almost disintegrated	6.67%

It will be noted that these potatoes had been graded sufficiently so that all tubers with other defects such as blight, bruises, growth cracks, etc. had been completely removed. The lot could be divided into two parts of 67.78% sound tubers and 32.22% in some stage of slimy rot. None of these tubers were cut for hollow heart but it was reported that they averaged about 8% in this respect.

Case No. 2. These potatoes had been shipped from Ludlow, Maine.

Apparently sound tubers	58.62%
Slimy pits from the size of a radish seed to the size of a pea seed	13.35%
Slimy pits from the size of a pea seed to some still firm tissue	18.62%
Bruises	9.41%

None of the tubers in this sack selected at random were completely disintegrated. Approximately 32% of the tubers were in some stage of slimy rot development which is about the same percentage as with case No. 1.

Case No. 3. These potatoes were shipped from Mapleton, Maine and had been graded again in Boston. This observation is of the "pickouts" only. The car was not seen and this count was made to find what the cause of the loss might be and is no indication of the percentage of loss for the car.

Bruises	41%
Late blight	31%
Ring rot	13%
External slimy rot (bacterial)	5%
Dirty (mud coated)	5%
Internal soft rot (bacterium & fungus)	4%
Growth cracks	1%

Case No. 4. These potatoes were shipped from New Limerick, Maine. They had obviously come from a wet bin and carried some old "pitting scars" of slimy rot, but their condition had been such as to prevent further development in shipment. In so far as there was no active slimy rot present no counts were made, but the car contained some late blight, ring rot, scab, and field sun burn.

Case No. 5. One car of Green Mountains from Limestone, Maine was found in Charlestown. Slimy rot has not been so much of a factor in Green Mountain as in Sebago, Katahdin, and Chippewa but counts were made in this car for net necrosis. About 20% net necrosis and 20% stem-end browning were found, also some late blight and ring rot. -- Robert C. Cassell, Emergency Plant Disease Prevention Project.

CONDITION OF MAINE POTATOES STORED IN RHODE ISLAND: Two large warehouses, one in Providence and one in Pawtucket, were visited where Government-owned Maine grown potatoes were being stored. Forty cars had been received at the Providence storage and 188 cars at the Pawtucket storage. It appeared likely that this would be all that would be received at the 2 places although it was understood that 100 cars were to be stored in Providence and 200 cars in Pawtucket.

The potatoes were all in 100-pound burlap bags as compared with the earlier bulk carload shipments received at Dover, New Hampshire and other places in New England. Consequently the potatoes were in much better condition for storage than the earlier shipments.

The potatoes at the Providence warehouse had just been received. Some of the bags had wet spots and these were placed before fans and dried well before storing. The bags were arranged in low stacks with ample space left for aeration. The temperature was controlled as well as possible without cold storage. Everything appeared to be in good order in this storage and the potatoes should keep in good condition for quite a while.

Some of the potatoes had been in the Pawtucket warehouse for about 2 weeks, and the last load had been in just a day or so. Some trouble will undoubtedly develop here as the cars were received too quickly to be handled at once in spite of the fact that a good crew was employed and a conveyor used in unloading. At one time 32 cars were waiting in the yards to be unloaded and some of these cars could not be opened for 3 or 4 days after their arrival. When some of the cars were opened it was found that freezing had occurred at the very bottom. Whole sacks were not frozen, but only the potatoes in contact with the floor. Furthermore, the excessive wait in the cars had encouraged rot of those tubers that had collapsed in transit, and some slimy rot had also developed. Although the Pawtucket warehouse was not equipped with fans for drying the partially spoiled bags, such bags were isolated in small piles in hopes that they would dry. Otherwise the potatoes had been stacked according to Government recommendations with ample ventilation supplied for the most part. This warehouse was not quite as well equipped for aeration as the Providence storage but a good job of storage was being done under the circumstances and the potatoes should keep without excessive loss if not held too long. Some of the bags however, will undoubtedly have to be opened and the potatoes regraded. -- Robert C. Cassell, Emergency Plant Disease Prevention Project. March 5 - 11.

POTATO STORAGE DISEASES IN RHODE ISLAND: Thirteen potato farms were visited in Slocum, Kingston, Wakefield, Kenyon and Charlestown, the concentrated potato area of Rhode Island. The 1943 drought in southern New

England reduced potato yields in Rhode Island from one-third to almost one-half. Much of the reduction came about through a reduction in size of the tubers; therefore small to medium tubers are the rule in the area. The drought, on the other hand, was also responsible for potatoes of low water content going into storage. The potatoes have kept remarkably well and in general remained of good quality. Most growers still have at least half of their potatoes on hand, which in most cases represents from 5,000 to 25,000 bushels.

With the exception of one case where the potatoes were dug after being partially frozen in the ground, storage losses in Rhode Island are negligible. The only appreciable losses encountered were due to sprouting, Fusarium rot, and the single case of field frost. Losses from storage "throw-outs", according to the growers, do not average more than one or two barrels to a car load. Following is a list of the losses and their causes as found in 18 farm bins:

Field sunburn (non-parasitic). Field sunburn was found in 2 bins, a trace in one bin of Green Mountains and about 15% in one bin of Sebagos.

Hollow heart (non-parasitic). A trace to 1% was found in 3 bins. Two bins were Green Mountains and one bin Sebagos.

Stem-end browning (unknown). Fourteen of the 18 bins seen were Green Mountains and all were examined for stem-end browning and net necrosis. Stem-end browning was found in only 3 bins and averaged approximately 10%, 20% and 30% respectively.

Net necrosis (leaf-roll virus) was found as a trace in one bin only. Even less net necrosis was found in Rhode Island than in Connecticut which was correspondingly less than in Massachusetts and northern New England. Dr. Donald Folsom of the Maine Agricultural Experiment Station has offered the following possible explanation for the small amount of net necrosis in southern New England, "The absence of net necrosis following a warm season may be due to the permanently inhibiting effect, upon the development of net necrosis in tubers recently infected by leaf roll, of high temperatures soon after maturing."

Scab (Actinomyces scabies) was found in 7 of the 18 bins. No more than a trace to 1% was found in any bin. Some of the scab was of the deep type causing the loss of a few tubers.

Rhizoctonia (Rhizoctonia solani) was found to be present in slight amounts on most tubers in all the bins. In only one bin was the severity appreciably noticeable.

Fusarium rot (Fusarium spp.) was the only storage rot really noticeable in any of the bins. It was found in 7 bins but ranged from a trace to only about 1%.

Ring rot (Corynebacterium sepedonicum) was found as a trace or less in 3 storages in the towns of Kingston, Kenyon and Charlestown. In all cases no ring rot could be found in the bins but a few tubers with ring rot could be found in the barrel of "pick-outs" beside the grader. Although no ring rot could be found in a second Kingston storage it was known to be present on the farm this year as it existed to the extent of 2 or 3% in the field at harvest time.

Field frost (non-parasitic) was found in 2 bins. In one bin the loss was negligible but in the other, in Charlestown, a loss of 6,000 bushels

was expected. The field was not dug until after a heavy freeze and enough tubers were injured to cause serious wet rot in the bin which made the entire bin a wet slimy mess.

In 5 bins sprouting was general enough to cause some concern. In most cases sprouting was due to poor storage conditions. One bin of Chippewa in addition to sprouting were also losing their firmness. In one bin of Green Mountains the sprouts were over 12 inches long; this was a deep-cellar bin with practically no aeration and very high humidity.

Grub-worm injury was noticed to a slight extent in two bins. The wire-worm injury which was of considerable concern in Connecticut did not exist in the Rhode Island area. -- R. C. Cassell, Emergency Plant Disease Prevention Project. March 5 - 11.

CONDITIONS OF STORED POTATOES IN CONNECTICUT: Potato storage houses of most of the large producers in Hartford and Tolland Counties were visited during the middle of February. These counties are the center of Connecticut's 22,000 acre potato production area of 1943. In quantity as represented by fall harvest the individual farm production ranged from about 6,000 bushels up to 115,000 bushels. Practically all of the storages are farm units of 15,000 to 30,000 bushel capacity.

Five things are particularily outstanding in the Connecticut potato area this year: (1) there is only about 60% of the normal quantity of potatoes in spite of an increased acreage, and about 40% of these are of B size. This condition is due to the summer and fall drought in the area; (2) a complete absence of late blight which in all probability can also be attributed to the drought; (3) an almost menacing presence of tuber injury by wireworm which is about the only thing that is prohibiting some of the graded potatoes from passing inspection; (4) the noticeable absence of any appreciable quantity of net necrosis in Green Mountains in spite of a very heavy infestation of aphids in the area last summer; (5) the generally dry condition of all storage houses which has been responsible for a good quality potato with practically no storage losses. The majority of storages are averaging not more than 1% "throw-outs" as a result of storage difficulties.

The towns of East Hartford, Warehouse Point, Rockville, Ellington, Simsbury, South Glastonbury, Wapping, Buckland, South Windsor, Broad Brook, Melrose, Somersville, Somers, and Hazardville were visited. Potatoes on 27 farms were seen and 42 bins were critically examined for diseases and keeping condition. Most of the potato storage houses are well constructed and the potatoes in general are keeping quite well. In a few houses the temperature had been allowed to remain too high and consequently the tubers are becoming soft and some sprouting had occurred. Sprouting is now particularily evident in bins of Chippewa and Sebago.

Rhizoctonia (Rhizoctonia solani) is generally present on tubers throughout the area. Prevalence ranged from a trace to 40% with an average of about 8%. In only one or two cases was the severity great enough to be a serious factor. However, some evidence was gained that "rhizoc" might have been a factor in poor tuber set.

Scab (Actinomyces scabies) was found in 21 of the 42 bins. Prevalence ranged from traces to 70% with an average of 6 to 7% for the 21 bins.

Many instances of scab, however, were of the deep crater type in which insects had worked making the tubers almost worthless. A few cases were found where the infection was high but according to the growers these came from isolated areas in certain fields where the scab was much worse than the general average of the field.

(Fusarium spp.). From traces to 1% of Fusarium tuber rots were found in 11 bins. In 5 of the bins the Fusarium rot was of the F. radicicola [F. javanicum var. radicicola] type.

Ring rot (Corynebacterium sepedonicum) was found on 5 farms. Four lots were Connecticut-grown potatoes, and one lot had been grown in Massachusetts by a Connecticut operator and stored after digging at his place in Ellington, Connecticut. Other towns in which ring rot was found were Rockville, Broad Brook, and Melrose. Not over 1% of ring-rotted tubers was found in any bin. In all cases the ring rot occurred from what the growers stated was certified Maine seed although 3 lots had been grown by 2 operators from one source of seed which was supposedly purchased as certified seconds.

Ring rot was also found in 2 lots of Maine-grown table stock stored in Ellington and Broad Brook.

Silver scurf (Spondylocladium atrovirens) was found in one bin of Chippewas in Buckland. Prevalence was probably 5 to 10% with the surface of many tubers well covered.

Net necrosis (leaf-roll virus) occurred in 12 of the 26 bins of Green Mountains. In 6 of the bins only a trace was found. About 1% was found in one bin, 2% in one bin, 4% in one bin, 6% in one bin, and 10% in two bins. This seems to be a surprisingly small amount of net necrosis considering the fact that this area was one of the hardest hit in New England by aphids last summer, and considering, too, the greater amount of net necrosis occurring in other areas of central and northern New England.

Stem-end browning (unknown) occurred in 14 of the 26 bins of Green Mountains. Prevalence ranged from a trace (6 bins) to 25% with an average of about 5% for the 14 bins.

Nine bins were found with a trace of field sun burn and one bin with a trace of hollow heart. -- Robert C. Cassell, Emergency Plant Disease Prevention Project. February 6 - 19.

POTATO STORAGE DISEASES IN INDIANA: During the week ending March 4, potatoes in storage in Cass, Kosciusko, Noble, and Whitley Counties in Indiana were examined. In these counties practically all of the locally grown potatoes had been marketed.

One lot of Indiana-grown Katahdin potatoes (one year from certification) was affected with a trace to slight scab and no late blight.

Three carloads of Maine certified Katahdin potatoes, that recently were received, were of excellent quality and apparently free from disease.

Maine-grown table-stock potatoes that were being stored in 4 storage houses under contract for the Surplus Commodities Commission were examined. These potatoes had arrived in Indiana in very poor condition during the latter part of October. According to C. T. Gregory, who examined a number of cars of these potatoes during unloading in Kosciusko County, between 5 to 10% of the tubers were discarded because of soft-rot

(Baccilus carotovorus) [Erwinia carotovora] and freezing injury. A small percentage of the tubers in many cases were affected with ring-rot (Corynebacterium sepedonicum) and late-blight (Phytophthora infestans). The potatoes had been stored in bulk and the sound tubers were in fair condition.

In conditioning the potatoes for market between 7 to 10% of the potatoes were being discarded because of soft-rot and 3 to 5% because of Phytophthora-rot. The surfaces of practically all of the potatoes were wet and smeared after passing over the graders. In one storage a few potatoes against an outside wall had been frozen and in 2 storages the potatoes in warm areas had sprouted moderately. -- R. C. Baines, Emergency Plant Disease Prevention Project.

POTATO STORAGE DISEASES IN WESTERN WASHINGTON: Potatoes were observed in storage in Clark, Skagit, and Whatcom Counties.

Dry types of rot due to Fusarium spp. were the more common. From limited observations and the opinions of producers, it is estimated that the loss of tubers due to this type of rot may approximate 6%. In addition to the loss of tubers, the labor costs for grading are increased materially. In certain instances, the decay was not readily apparent on the surface, but when cut the heart of the tuber showed large dry rot cavities connected to a small surface wound. More commonly, however, the decay was readily apparent on the surface.

Wet types of rot were not common except where ventilation and temperature control in storage had obviously been poor.

Net necrosis (virus) was evident in certain lots of tubers, although no serious loss was observed. However, it was reported to have caused heavy losses and the comment of certain producers was that this disease results in more serious loss than any other and should be feared as ring rot is.

Ring rot (Corynebacterium sepedonicum) was not evident in the lots observed although growers and inspectors report that losses due to ring rot occurred in this area. Commercial producers of potatoes seem to fear this disease more than others and are generally cooperative in its control.

Scab (Actinomyces scabies) was very severe on certain lots representing only a small percentage of the total crop. As far as could be determined these heavy infections resulted from the use of barnyard manure on the crop. Some growers do not believe that such scab is infectious and refer to it as "manure scab" to differentiate it. The aggravation of this disease by the use of manure is not well understood by many farmers.

Silver scurf (Spondylocladium atrovirens) was evident on many lots in Skagit County, occurring on nearly every tuber in some lots. Other lots appeared to be entirely free.

Internal bruise? A complaint was made by the U. S. Navy of darkened areas in the tissue of graded tubers. The darkened spots were of various sizes and degrees of intensity. They seldom occurred on the surface but usually from 1/16 to 1/2 inch beneath. The tubers appeared to be sound and free from disease, the only defect being the discoloration. No discoloration was found in the tubers still in the storage pit, but after handling, grading, and storage for several days the discoloration was evi-

dent to varying extents in about 75% of the tubers. About 4 carloads had lost grade. When such large, crisp tubers are graded, a spongy pad under the sack as the tubers drop from the grader and as the sack is jigged before sewing might reduce such losses. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project. February 9 - 22.

USE OF AIR-CONDITIONING MACHINERY FOR CONTROLLING POTATO STORAGE IN WESTERN OREGON: Foundation seed stock was observed in an air-conditioned cellar. Of course these were selected tubers free from disease, but it seems likely that the careful control of storage conditions also contributed to the lack of decay, not one rotting tuber being noted.

Such use of air-conditioning machinery for forced ventilation of storage cellars presents possibilities that should be considered in the general planning for post-war use of machines. Even though common stock would not possess the value of this foundation seed stock, it seems very probable that forced ventilation, in storage, with refrigeration in some cases, might pay several times the cost of the investment and of operation by the reduction in the development of rots. It would not be necessary to operate themachines constantly, but large capacity fans could change the air at favorable intervals with effects lasting for an extended period in a well-built cellar. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

STORAGE DISEASES OF SWEETPOTATOES

SWEETPOTATO STORAGE DISEASES IN SOUTH CARCLINA: Community storage houses were visited in Pickens, Greenville, Anderson, and Spartanburg Counties in the Piedmont section of South Carolina. Each storage contained produce from many farms and in spite of the fact that the storage conditions for all lots in any one house were the same there was great variation in the amount of rot.

The most common trouble in stored sweetpotatoes was surface rot [Fusarium oxysporum] which was a source of considerable worry to those using their sweetpotatoes for seed. In some lots all of the sweetpotatoes were affected with "bruises" and were dried and shriveled.

Soft rot [Rhizopus] was very common and in several cases whole baskets were destroyed. The loss due to soft rot was as high at 25% but averaged about 10% in the storage houses visited.

Charcoal rot [Sclerotium bataticola] and Java black rot [Diplodia tubericola] were found in trace amounts in several houses.

One storage house visited had a large pile of culls outside the door which were almost 100% black rot [Ceratostomella fimbriata]. Whether this was from the crop of a single grower or whether it was discards for several crops could not be ascertained.

Scurf [Monilochaetes infuscans] was present in many lots but the percentage of roots infected was low.

Cold necrosis or internal breakdown was observed in sweetpotatoes brought to the storage house several weeks after harvest; obviously they had been damaged before storage. This necrosis is reportedly much more

common this year than for any of the past ten years. Temperatures in December were lower by several degrees than in previous years. The probability is that many storage houses were inadequately heated.

A sweetpotato drying plant at Camden, South Carolina was visited. The operator had quit drying sweetpotatoes because there were none to be obtained at the price he could afford to pay. Because his price was low, sweetpotatoes with all the diseases on record were shipped to him. To make matters worse he made the mistake of storing them at 65° F. He lost 25% of the sweetpotatoes before they were dried and "defects" (dried cubes with rot, poor color, etc.) in the finished product, ran 25%. The Government allows 2% defects in the finished product. -- R. E. Atkinson, Emergency Plant Disease Prevention Project. February 21 - March 4.

SWEETPOTATO STORAGE DISEASES IN GEORGIA: Estimates of sweetpotato losses in bank storage were obtained in the Rhine community. Losses were found to be heavy, ranging from 50 to 95%, the average being approximately 65%. Black rot predominated, while dry rot, mottle-necrosis [Pythium], charcoal rot, soft rot, and pox or soil rot [Actinomyces] were common. Sweetpotatoes were examined in an electrically heated community storage house in Rhine. Some of the lots had kept well, with losses as low as 10%, while in others the losses were heavy. It is apparent from these limited observations that much could be done in Georgia toward reducing losses in storage materially through an educational program on disease control and the use of properly constructed and managed curing and storage houses. -- G. M. Stone, Emergency Plant Disease Prevention Project. February 16 - 29.

SWEETPOTATOES IN HILL STORAGE IN ALABAMA: At the Draper Prison in Elmore County, January 13, 4000 bushels in hill storage were examined. The total loss from rot was 50%. Soft rot (Rhizopus) was severe and traces of black rot and Java black rot were observed. The presence of charcoal rot was suspected from symptoms observed but Sclerotium batatícola has not been isolated. A considerable amount of cold injury was apparent that had been followed by Rhizopus. -- John R. Jackson, Emergency Plant Disease Prevention Project.

SQUASH STORAGE DISEASES IN NEW ENGLAND

Robert C. Cassell

Condition of Massachusetts Squash Storages the Third Week of February: Of the dozen or so large growers of squash in Middlesex County only 4 could be found in the present survey with squash still on hand. The price of squash is still 4 1/2 to 5¢ per pound, occasionally 5 1/2¢, which is essentially the same as a month to 6 weeks ago. There has been no real price incentive to hold squash this year and those who still have them are growers with storages especially constructed for squash where there has been very little loss. All 4 of the storages were structures with the squash storage on the second floor, a condition apparently

partially associated with good squash keeping condition. The squash found stored in "first floor" structures and in greenhouses on earlier surveys have since been disposed of.

Grower No. 1. - Woburn. Out of an original 100 tons of squash stored this grower has about 5 tons left. His loss from storage rots of the 100 tons will be about 1 1/2 tons. Losses seemed to be about equally divided between black rot (Mycosphaerella citrullina), bacterial wilt (Erwinia tracheiphila) and Fusarium spp.

Grower No. 2. - Winchester. This grower still has about 50 tons left out of a fall storage of 200 tons. His losses from storage rots have been almost negligible as his total loss from rots for the season probably will not be over half a ton. Causal losses seemed to be about equally divided between black rot and Fusarium spp.. This grower is an elderly man with a life-time's experience in squash production and has a storage "tailor made" for squash. His farm also seems to be strategically located for squash production, since the fruits, although smaller than average size, are neverthless comparatively free from diseases when brought from the field.

Grower no. 3. - Winchester. This grower has about 35 or 40 tons left out of 75 tons originally stored. The fruits seem to be about 15% specked with losses probably averaging 7% to 8% for the storage. Black rot, bacterial wilt, and Fusarium spp. seemed to be about equally divided in this storage too.

Grower No. 4. - Dracut. This storage still contains about 50 tons of an original 200 tons. There is an average of about 20% affected squash with a loss of probably 10% to 12% of the 200 tons. Black rot was by far the predominating disease with some Fusarium present.

Connecticut: One squash storage was found in Southington where about 3 tons were still left, now completely unmarketable. They were 100% infected with black rot, with severity almost as great. Many secondary fungi were present and the only other primary parasite that could be distinguished with certainty was a trace of bacterial wilt. (February 16 - 19).

EMERGENCY PLANT DISEASE PREVENTION PROJECT

CONDITION OF STORED APPLES IN NEW ENGLAND

Robert C. Cassell

Rhode Island: Two apple cold storages were visited, one the Merchants Cold Storage in Providence, and the other a farm storage in Greenville. The Merchants Cold Storage is almost ideal for apples as the temperature is held low enough to prevent "pin-point" scab development and the humidity is controlled to 85% or 90%. Consequently the apples in this storage are in excellent condition and about the only disease found was some orchard scab existing in slight amounts on a few apples.

Not many apples were left in the Greenville storage and they were somewhat more diseased than those in the Providence storage. Some lots of

apples had 2% to 4% field scab (Venturia inaequalis). Traces of blue mold (Penicillium expansum), Botrytis rot (Botrytis sp.), bitter pit (non-parasitic), black rot (Physalospora malorum)[P. obtusa] and storage scald (non-parasitic) were present. (March 5 - 11).

Connecticut: Seven apple cold storages and one common storage were visited on farms in West Simsbury, Farmington, Southington, Weathersfield, Rocky Hill, South Glastonbury, and South Windsor. Most storages have already disposed of the bulk of their apples. Stops were made at 2 storages in Bristol where all of the apples were gone. Prices have been good and the demand for apples of all grades and qualities has been strong. The small crop this year has created a demand that has quickly cleaned out the relatively small holdings in storages. In some cases apples from outside the State have been purchased for resale by the usual producers.

Scab on stored apples still reflects the differences that existed last summer between orchards in the control of scab. In 3 of the storages only a trace of orchard scab was present. Four storages ranged from 3% to 10% prevalence of scabby apples. In one storage prevalence was at least 80% to 85%. In the 2 storages having 10% and 80% orchard scab a trace of storage scab could be detected. No storage scab was found in other houses except in one storage where some Maine Baldwins had been brought in. These apples had about 10% storage scab. The scarcity of storage scab in Connecticut is likely related to good scab control in some cases plus the severe drought during the summer and through the picking season helping to limit late fruit infections.

Blue mold was present in all the storages. It ranged in prevalence from a trace to 4 or 5%.

Black-rot was found in 2 storages, a trace in one and about 1% in the other.

Botrytis sp. existed as a trace only in 7 of the 8 storages.

Bitter pit (Physiologic). Six of the storages had some Baldwins and in all cases they were accompanied by bitter pit. In one storage the Canada Reds also had some bitter pit. Within the 6 storages the range of prevalence was from a trace to 20% with an average of about 5%.

Storage scald (Physiologic). A trace was noted on McIntosh in one storage. (February 6 - 19).

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

BRIEF NOTES ON PLANT DISEASES, AND SOME CORRECTIONS

TOBACCO DOWNY MILDEW IN GEORGIA: Mr. J. G. Gaines accompanied the writer on a survey of tobacco beds in the Tifton, Douglas, and Nashville areas of Georgia on March 1. Damping-off was found to be prevalent. A number of beds had been replanted. What appeared to be magnesium deficiency was observed in quite a few beds.

Based on reports from County Agents and farmers, the first occurrence this year of blue mold [downy mildew, Peronospora tabacina] in the State was about February 23. "Mold" was found in 4, all old, beds, out of some 35 to 40 examined. Mr. Gaines commented that he had never seen such

a predominance of new beds before in Georgia. Blue mold occurred about a month later this year than last year, while the plants are just about as far advanced. The predominance of new beds will further delay general infection. It is fairly safe to predict, barring unusually cool weather for the next month, that this will be a light blue mold year in Georgia.--G. M. Stone, Emergency Plant Disease Prevention Project.

DISEASES OF SUGAR BEET IN THE IMPERIAL VALLEY OF CALIFORNIA: Curly top (virus) was found to be widespread in the Valley; however, only a few affected plants were found in most of the fields. Leaf spot (Cercospora beticola) was absent in the commercial plantings. Volunteer sugar beets growing in an alfalfa field were found heavily infected with the leaf spot fungus. Apparently a higher humidity was present in the alfalfa planting, thereby making conditions more favorable for leaf spot infection on the sugar beet plants. -- E. W. Bodine, Emergency Plant Disease Prevention Project. Report for January 9 - 29.

CERCOSPORELLA SPOT ON BROCCOLI: The leaves of broccoli (Brassica oleracea var. italica) purchased in a store at Lafayette, Indiana, were infected severely with Cercosporella albo-maculans (Ell. & Ev.) Sacc. (leaf spot). The lesions were brown, usually circular, but occasionally irregular in shape, and up to 1/8 inch in diameter. Lesions on the veins were usually long. I was unable to ascertain the origin of the broccoli, but very likely it was grown in a southern State. The fungus has been reported as causing a leaf spot disease of Chinese cabbage, kale, rutabaga, and turnip, and possibly has not been reported as occurring on broccoli. -- R. C. Baines, Emergency Plant Disease Prevention Project. Week ending February 26.

A CORRECTION - PEA ROOT ROTS IN SOUTHERN CALIFORNIA: Attention is called to Seth Barton Locke's correction of an earlier report, on page 222.

REPORT OF THE SOUTHERN COOPERATIVE CORN DISEASE RESEARCH COMMITTEE - A CORRECTION: On page 76 of the February 1 issue (no. 3), the addresses of G. Y. Young and R. C. Eckhardt, given as State College, Mass., should be State College, Miss. In the list of chemicals used in the rates of application tests, no. 4 should be Merko.

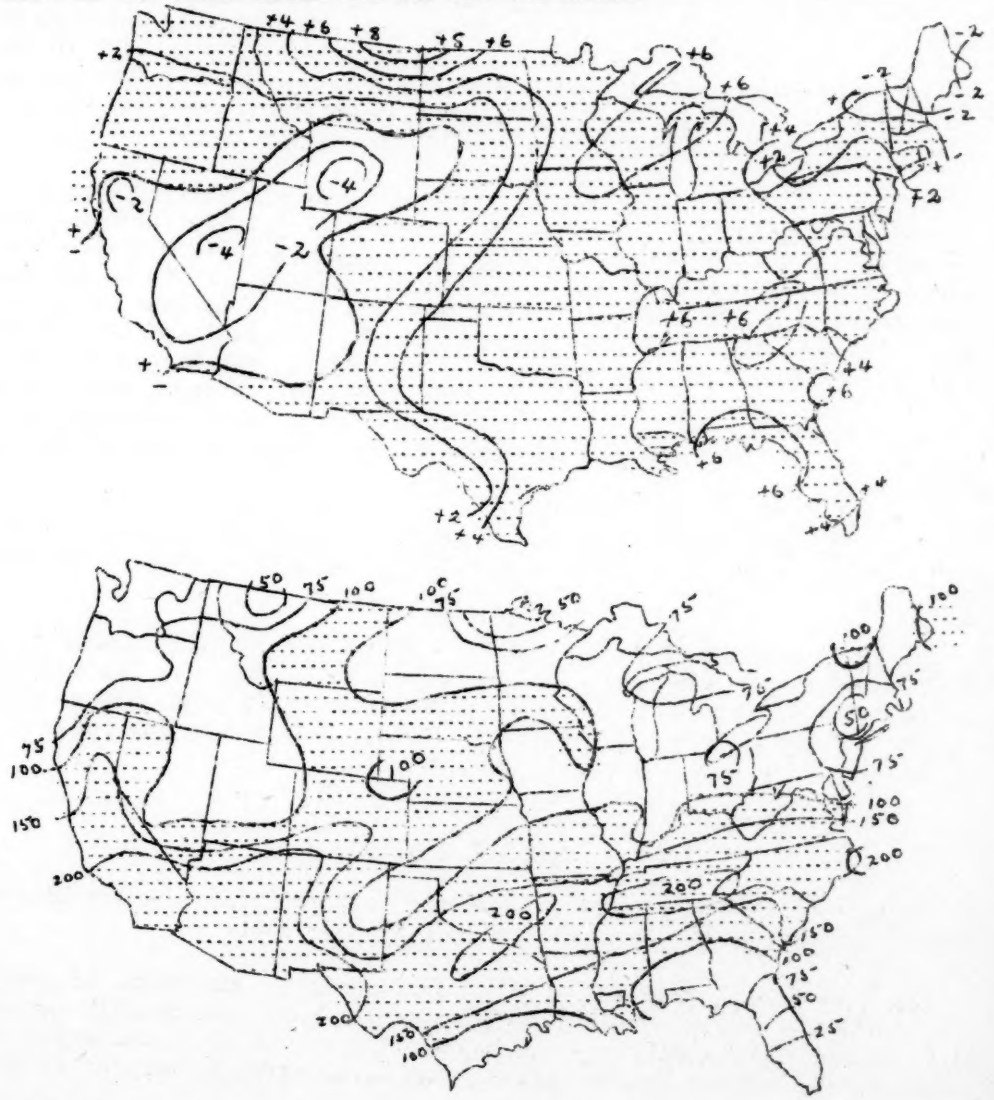
FEBRUARY WEATHER

(From the U. S. Department of Commerce Weather Bureau, Weekly Weather and Crop Bulletin for the week ending March 7, 1944).

Map 1 shows that February 1944 had above-normal temperature in practically all areas east of the Rocky Mountains. While the monthly means were moderately deficient in the Northeast and locally in the western Great Plains and Rio Grande Valley, they were uniformly from 4° to 8°

above normal everywhere from the Appalachian Mountains to the eastern Great Plains. West of the Plains the month was colder than normal in northern Rocky Mountain districts, the southern Great Basin and most of California and slightly warmer than normal in northern sections.

Map 2 shows the February percentage of normal precipitation, based on first-order stations. Except in Gulf sections, especially Florida and extreme southern Texas, February was abnormally wet from the Potomac, Ohio, and lower Missouri Valleys southward and relatively dry to the northward. In the far Southwest, including southern California, the monthly totals were 2 to 3 times the normal, but they were deficient in most of the Great Basin and the far Northwest.



Map 1 (upper), departure of mean temperature from the normal, and Map 2 (lower), percentage of normal precipitation, for February 1944. Shaded areas, normal or above.